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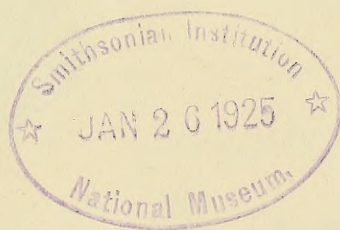
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ANNALS
OF THE
SOUTH AFRICAN MUSEUM

VOLUME XIV



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SOUTH AFRICAN MUSEUM

VOLUME XIV



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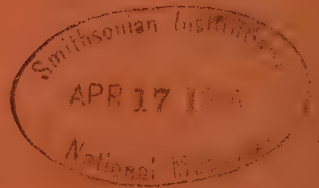
OF THE

SOUTH AFRICAN MUSEUM

VOLUME XIV.

PART I. *containing:—*

- 1.—*A Monograph of the Formicidæ of South Africa (Ponerinae; Dorylinae).* By GEORGE ARNOLD, M.Sc., A.R.C.S., F.E.S.,
Curator of the Rhodesia Museum, Buluwayo, (Plate I.)

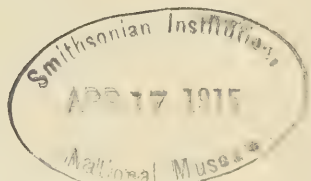


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ANNALS OF THE SOUTH AFRICAN MUSEUM.

(Vol. XIV.)



- 1.—*A Monograph of the Formicidae of South Africa.*—By GEORGE
ARNOLD, M.Sc., A.R.C.S., F.E.S., *Curator of the Rhodesia
Museum, Bulawayo.*

INTRODUCTION.

UP to the present time, no work has been published which deals with the Formicidae of South Africa in monographic form. The descriptions of nearly three hundred species are scattered over a large number of scientific journals, of which many are rare or otherwise difficult to obtain. The task of identifying the ants of this region is therefore rendered very arduous, if not altogether impossible, since each isolated description has to be searched for amongst numerous, and often very obscure publications, many of which are not to be found in the few scientific libraries of South Africa. It is therefore not to be supposed that the following pages contain a complete account of all the known South African species, since some may have escaped my notice, but it is hoped that they will serve as a basis of study for future workers.

The difficulty of obtaining such publications for reference has been surmounted in this instance largely through the kindness of friends and of officials of kindred institutions. Many descriptions of species which I have not been able to see, have been copied for

me in London by Miss M. Munro. Dr. Louis Péringuey has given me most generous aid in searching for references, and in lending me books from the library of the South African Museum, and also in submitting to my inspection the whole of the collections of ants in that institution. I have also received much valuable help from Dr. Hans Brauns, of Willowmore, who has lent me selections from his library and has collected for me many specimens which I could not otherwise have obtained. I am particularly indebted to Dr. A. Forel, who has identified nearly all the species which have been taken by my friends or by myself, and without whose generous assistance the difficulties in attempting this work could hardly have been overcome. Messrs. Cooper, Marley, Zealley, and Macgregor have also collected for me, and to them and to Father Kendal, S.J., of Bulawayo, who most kindly corrected translations from the Italian for me, I wish to tender my sincere thanks. I also wish to express my gratitude to the Royal Society of South Africa for a grant of £45 in aid of this work, whereby I was enabled to travel to Capetown and copy many references from the works in the library of the South African Museum, and to proceed subsequently to Willowmore and Durban for the purpose of collecting the ants of those regions.

The title, "South African," chosen for this work is admittedly rather indefinite, for in the geographical distribution of the ants, as in the case of nearly all the Aculeate Hymenoptera, no definite limits, such as Sclater's original South African Region, or its various modifications, can be adopted. Our present knowledge of the ants of Africa is not sufficient to enable us to draw any solid deductions from a survey of their distribution. The Sahara, however, forms a fairly strong boundary, separating off the North African (*i.e.* Mediterranean) forms from those of the Ethiopian Region, yet several species pass through it by the gap of the Nile Valley; there are also not a few species which occur all along the East Coast from Abyssinia downwards, and several species originally discovered in the equatorial regions of the Congo have been taken by myself in Southern Rhodesia.

It is therefore with a view to reducing the work to convenient proportions that I have decided to limit this monograph to the inclusion of those species which have been found in British South Africa, part of Portuguese East Africa, and German South-west Africa, but also including some species which, although recorded outside these limits, may yet be expected to be found in them in the future.

In the following pages I have copied the original descriptions of those species of which I have not been able to see specimens, such copies being indicated by inverted commas. For the generic descriptions and keys to genera, I have borrowed to a large extent from Prof. Emery's work on the Ponerinae in the "Genera Insectorum," an invaluable work which is indispensable to all students of the family.

Species represented in the Rhodesia Museum's collection are

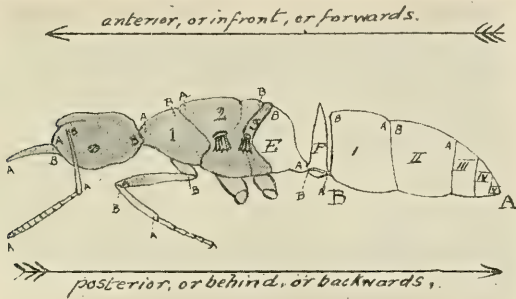


FIG. 1.

EUPONERA SENNAARENSIS, Mayr. ♀.

1, 2, 3 = pro-, meso-, and meta-notum.

E = epinotum.

P = Petiole.

I, II, III, IV, V = 1st-5th segments of abdomen.

BA = base and apex of the whole gaster (abdomen).

A = apex
B = base } of the different parts and segments.

Thorax and head shaded; true abdominal segments unshaded.

indicated by the initials R.M., in that of the South African Museum by S.A.M., and in my own collection by G.A.; such initials being placed after the descriptions of the species.

It is hardly necessary to give an introductory outline of the external anatomy of the Formicidae, since that information is easily obtained in various entomological textbooks.*

But it will be necessary, for the understanding of the following descriptions, to give a short explanation of certain features in the anatomy of these insects, and of some modifications in the terminology which I have thought desirable to adopt.

As is well known, the posterior portion of the "thorax" of the

* A very clear and full account may be seen in Wheeler's "Ants," Columbia Univ. Biol. Series, 1910.

Hymenoptera is not a true thoracic segment, but is composed of an abdominal segment which has shifted forwards during embryonic development. Hence arises what at first sight appears to be a needlessly confusing terminology of the different parts. Since the posterior portion of the thorax, variously termed the propodeum, epinotum, middle segment, metanotum, etc., is in reality the true 1st abdominal segment, the 1st joint of the petiole is therefore the true 2nd abdominal segment. For taxonomic purposes, and more particu-

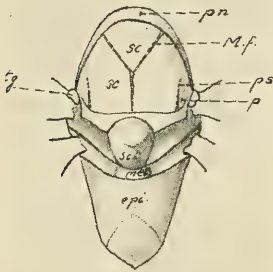


FIG. 2.

THORAX OF *PACHYCONDYLA KRÜGERI*,
Forel. ♂.

pn = pronotum.
sc = scutum of mesonotum.
M.f. = Mayrian furrows.
ps = parapsidal furrow.
p = parapsis.
scut = scutellum of mesonotum.
met = metanotum.
ep = epinotum.
tg = tegula.

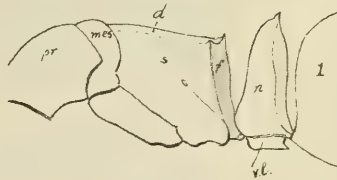


FIG. 3.

STREBLOGNATHUS AETHIOPICUS. ♀.

Seen obliquely from the side and above.

d = dorsum
s = side
f = face or declivity } of epinotum.
n = node of petiole.
vl = ventral lamella of petiole.
I = 1st abdominal segment.
mes = mesonotum.
pr = pronotum.

larly in dealing with the comparative dimensions of head, thorax, and abdomen, the epinotum is regarded as a part of the thorax, the petiole (whether of one or two joints), is treated of as a distinct region, and the 1st segment behind the petiole is described as the 1st abdominal segment. The latter is termed by some authors the post-petiole, and the segment following it is in that case called either the 1st abdominal segment or simply the 2nd segment. In this work, the segment following the petiole, whether the latter be of one or two joints, will always be treated as the 1st abdominal. A glance at Fig. 1, p. 3, will explain more clearly the terminology adopted.

Another important point which the reader should particularly note is that if we regard the epinotum as the basal segment of the abdomen, the thoracic and abdominal regions are contiguous at their bases, *i.e.* the metanotum on one side and the epinotum on the other. Hence the bases and apices of the separate segments of those two regions lie in opposite directions; it should therefore be distinctly remembered that when the base of the epinotum is referred to, that portion of it is indicated which adjoins the meso-metanotal part of the thorax. In the worker caste the metanotum is usually

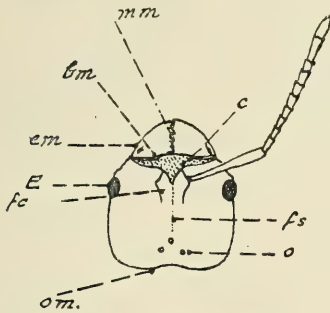


FIG. 4.

HEAD OF *EUPONERA SENNAARENSIS*. ♀.

mm = masticatory or terminal margin of mandible.

bm = basal margin of mandible.

em = external margin of mandible.

c = clypeus (dotted).

fc = frontal carina.

fs = frontal sulcus.

E = (compound) Eye.

o = ocellus.

om = occipital margin of the head.

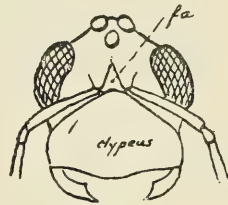


FIG. 5.

HEAD OF *OPHTHALMOPONE BERTHOUDI*. ♂.

Showing *fa* = frontal area.

small, and so completely fused with the mesonotum as not to be recognizable, so that the dorsal suture which separates the metanotal region from that of the epinotal is commonly called the meso-epinotal suture, although strictly speaking it should be called the meta-epinotal. In the male and female the metanotum is distinctly defined (see Figs. 1 and 2, pp. 3, 4). The epinotum is so closely attached to the thorax, in the worker, that its boundaries are not always easily distinguishable. For purposes of description it will be convenient to treat of it as composed of three parts, *viz.* the sides, the dorsum, and the declivity (see Fig. 3, p. 4). The declivity is the sloping part of the epinotum, adjoining at its apex the base of the petiole. The dorsum, when flat or concave, is

tolerably distinct from the sides, but is confluent with them when it is rounded or convex. Similarly the dorsum merges into the declivity when the slope of the latter is very gradual.

For the convenience of the student who wishes to consult the original descriptions of the Continental authors, the following glossary of synonyms is appended:—

Epistome = clypeus.

Arêtes frontales = frontal carinae.

Fosses antennaires = antennal sockets, or antennal hollows in the Odontomachini.

Metanotum, in the ♂ = epinotum.

Propodeum = epinotum.

Face basale, of epinotum or metanotum = dorsum of epinotum.

Post-petiole = first abdominal segment.

Sillons de Mayr = convergent Y-shaped grooves on the mesonotum in the male, or, Mayrian furrows.

FAMILY FORMICIDAE.

The family Formicidae is divided into five sub-families, viz. Ponerinae, Dorylinae, Myrmicinae, Dolichoderinae, and Camponotinae. Of these the first, with which we are now concerned, is the most primitive, and from which, it is generally agreed, the others have originated.

The Ponerinae flourish chiefly in the tropical regions of the globe, being poorly represented in the temperate zones; in South Africa they compose about 20 per cent. of the known ant fauna, a not inconsiderable portion.

The phenomenon of polymorphism which is so frequently observed in the Dorylinae, Myrmicinae, and Camponotinae is almost entirely absent in this sub-family. *Megaponera foetens* may possibly furnish an exception: in this ant the individuals are of two sizes, the smaller form, which differs considerably in appearance from the larger, having been described originally as a distinct species (*crassicornis*, Gerst.). It is, however, very probable that the larger form represents an ergatoid female, in which case this species is exceptional in having not one such female as is usually the rule when they occur, but as many or more females as there are true workers.*

* See note to the description of this species, p. 48.

In many species of the larger Ponerinae no winged females have ever been discovered, from which it may be assumed that the functions of the female are usurped by one or more of the workers. Where winged females occur, they are seldom much larger than the workers.

The larvae of the Formicidae, like those of all the Aculeate Hymenoptera, are legless grubs. The larva has a small head and thirteen segments. Three of these belong to the thorax, and the rest to the petiole plus the abdomen. The mouth-parts of the larva consist of a pair of mandibles, a pair of maxillae, and an unpaired labium. The spinning glands, with which the larva spins its cocoon, open on little papillae situated on the labium. Eyes are entirely absent. In some species the larvae are naked, but usually are provided with chitinous hairs which vary very considerably in their structure and arrangement according to the species. The hairs may be simple pointed setae, or plumose, furcate, serrate, or ramose. They prevent the larvae from lying in direct contact with the moist soil of the nest, and also help to hold the young ones together in packets, thereby enabling the nurses to transport large numbers from place to place with little trouble. In addition to the hairs, some larvae, especially of the Ponerinae, have tubercles on some or all of the segments. In *Ponera* some of the segments are provided with pairs of dorsal tubercles, secreting a glutinous substance which serves to attach the larva to the walls of the nest.

In the Dolichoderinae, Camponotinae, and some of the Myrmicinae, the larvae are fed with liquid food regurgitated by the workers. In the Dorylinae, Ponerinae, and some of the Myrmicinae on the other hand, the larvae are nearly always fed with pieces of solid food, which in the case of the two former families is nearly almost invariably animal matter (*Dorylus orientalis*, which feeds on the soft bark of plants, is a notable exception). Possibly *Ponera senaarensis*, Mayr, is also an exception to the rule: this ant preys unceasingly on termites, but its nest very often contains considerable accumulations of grass seeds, which may perhaps be used as food.

The economic value of the Ponerinae in tropical countries can hardly be overestimated, for it may be safely asserted that at least 80 per cent. of their food consists of termites, and they thereby constitute one of the chief checks to these pests of the tropics.

Certain species are exceptional, such as *Plectroctena mandibularis*, which feeds chiefly on millipedes and beetles, and *Platythyrea Arnoldi*, For., whose food consists entirely of small beetles, mostly Tenebrionidae.

The colonies are usually small in Ponerine ants, but may be very numerous in some species, such as *Paltothyreus tarsatus*, *Megaponera foetens*, *Euponera sennaarensis*, many species of *Leptogenys* and *Odontomachus haematoda*.

The habit of foraging in files has been observed in several species of Ponerinae in different parts of the world. In our region this habit is displayed by *Megaponera foetens*, and to a slight extent by *Paltothyreus tarsatus*. The former marches in double file, and the striking disparity in size between the two forms composing the colony has a very singular appearance. Their prey consists entirely of termites, and when a suitable hunting-ground containing these animals has been found, the columns break up and pour into every hole and crack which leads to the invaded galleries. The method then adopted is as follows: Each ant brings to the surface one or more termites, and then re-enters the galleries to bring up more victims. This is continued until each ant has retrieved about half a dozen termites, which, in a maimed condition, are left struggling feebly at the surface. The whole army reassembles again outside, and each marauder picks up as many termites as it can conveniently carry, usually 3 or 4. The columns are then re-formed and march home. Less order is shown by *P. tarsatus*, but I have often seen this ant carrying termites, in short single files composed of about a dozen workers.

According to my experience of the Ponerinae of Rhodesia, parasites and ant's-nest guests are remarkably scarce in the nests of these ants. I have never met with any of the larger Paussidae which are known or suspected to frequent their nests.* But in the colonies of nearly all the Ponerinae, and in a large number belonging to the other sub-families, a very common Thysanuran, of a slaty colour, is found in abundance, and also a white Isopod. I have also found in the nests of *Platythrea cribrinodis* a *Cossyphodes* (*Arnoldi*, Brauns) in small numbers.

Probably all the Ponerinae are able to make stridulatory sounds, which in the case of the smaller species may be of so acute a pitch as to be imperceptible to our ears. The stridulation is produced by transverse striae on the under and upper surfaces respectively of the 1st and 2nd abdominal segments. In larger species, such as *Paltothyreus tarsatus* and *Megaponera foetens*, the sound is plainly audible at a distance of several feet.

Other bionomic notes, when available, will be appended to the

* *Cerapterus natalensis* has been found in the galleries of *Platythrea cribrinodis* in Natal.—THE EDITOR.

descriptions of the species, but it must be admitted that we know very little of the life histories of the Ponerinae, and a considerable amount of work remains to be done before we can claim to have a comprehensive knowledge of their natural history.

In the following descriptions, the length is given for each species, from the apex of the closed mandibles to the apex of the abdomen. It is also convenient to treat of the short downy hairs as distinct from the longer, thicker, and more rigid ones. The former kind is termed the pubescence, the latter the pilosity. Occasionally the one merges into the other, in which case the whole hairy covering is treated as the pilosity.

Unless otherwise stated, the density and size of the punctures and other sculptural characters are understood to be visible with a lens magnifying from 20 to 25 diameters, or less.

The dimensions of the head (length compared to width), and the shape, are given exclusive of the mandibles.

Key to the Sub-Families of the Formicidae. Workers.

- (8). 1. Petiole one-jointed.
- (3). 2. A more or less distinct constriction between the 1st and 2nd abdominal segments; ♀ always with well-developed sting; pupa always enclosed in a cocoon *Ponerinae*.
- (2). 3. No constriction between 1st and 2nd abdominal segments.
- (7). 4. Anal aperture transverse.
- (6). 5. Eyes entirely absent; clypeus very small; sting present, sometimes vestigial; pupae naked or enclosed in a cocoon *Dorylinae*.
- (5). 6. Eyes always present; clypeus not very small; sting very small and atrophied *Dolichoderinae*.
- (4). 7. Anal aperture circular. Sting absent; pupae usually enclosed in cocoons. *Camponotinae*.
- (1). 8. Petiole two-jointed; sting present; pupae always naked . . . *Myrmicinae*.

In some ♂ *Dorylinae* the petiole is almost two-jointed, but the absence of eyes, and the small clypeus will distinguish them from the *Myrmicinae*.

SUB-FAMILY PONERINAE.

(Dalla Torre. Cat. Hymen., vol. 7, p. 13).

Characters.

Except in some males of the *Ponerini*, and in the *Odontomachini*, the 1st abdominal segment is marked off by a more or less distinct constriction from the 2nd segment.

Females and workers with well-developed sting.

Females and males. The anterior wings generally have 2 closed cubital cells.

Nymphs always enclosed in a cocoon.

Emery divides the Ponerinae into three sections, based on characters derived from the larvae and males, but of which there are no corresponding characters in the female and worker. As far as our present knowledge enables us to judge, these divisions appear to be sufficiently natural, and are as follows:—

I. PRODORYLINAE. Larva uniformly hirsute, without piligerous tubercles; ♂. Mandibles well developed; genital armature retractile, sub-genital valve widely excised; cerci absent.

II. PROPONERINAE. Larva as in I.; ♂. Mandibles well developed; genital armature usually non-retractile; sub-genital valve entire; cerci absent.

III. EUPONERINAE. Larva with piligerous tubercles; ♂. Mandibles more or less reduced; genital armature non-retractile; sub-genital valve always entire; cerci present.

The first section includes the following South African genera, *Cerapachys*, *Phyracaces*, and *Simopone*.

The second section includes *Platythyrea*, *Sysphincta*, and *Probolomyrmex*.

To the third section belong all the other South African Ponerinae.

The following dichotomic tables of the tribes, based on the characters of the ♀ and ♂, is derived from Emery's work ("Gen. Insectorum"). Unfortunately the males of many species are still unknown, and moreover, in quite a large number of species winged females have never been found, so that a key for these sexes (in many genera) cannot be provided. There is a tendency among the Ponerinae for the suppression of the winged ♀, which is replaced by ergatoid females differing but little from the workers except in size and pilosity.

*Key to the Tribes of the Ponerinae, based on the Characters of the
♂ and ♀.*

- (2). 1. Claws pectinate *Leptogenyini*, Forel.
- (1). 2. Claws simple or toothed.
- (4). 3. Mandibles articulated to the middle of the anterior margin of the head *Odontomachini*, Mayr.
- (3). 4. Mandibles articulated to the anterior angles of the head.
- (6). 5. At least one ocellus in the ♂; body elongate, pygidium armed at the sides with several stumpy spines *Cylindromyrmecini*, Emery.

- (5). 6. Usually no ocellus in the ♂; pygidium without spines at the sides.
- (10). 7. Insertion of the antennae not covered by the frontal carinae.
- (9). 8. Abdomen strongly reflexed ventrally, or, if not, the frontal carinae are fused together and to the clypeus *Proceratiini*, Emery.
- (8). 9. Abdomen not reflexed ventrally; frontal carinae distinct from each other. Antennal sockets delimited laterally by carina.
Cerapachyini, Forel.
- (7). 10. Insertion of the antennae at least partly covered by the frontal carinae.*
- (12). 11. Frontal carinae with a lateral lobe; antennae inserted close together.
Ponerini, Forel.
- (11). 12. Frontal carinae with a lateral lobe, but antennae inserted widely apart; clypeus flat, and whole body covered with a very fine pruinose pubescence.
Platythyreini, Emery.

SECTION PRODORYLINAE, Emery.

TRIBE CERAPACHYINI, Forel.

Characters.

Frontal carinae nearly vertical in all the sexes, and not covering the insertion of the antennae. ♂ without ocelli; petiole narrowly articulated to the 1st abdominal segment.

Wings with only one closed cubital cell.

Including two South African genera, distinguished as follows:—

- 1. Last antennal joint much larger than the preceding, forming a single-jointed club; petiole not margined *Cerapachys*, F. Smith.
- 2. Last antennal joint only slightly larger than the preceding, not forming a club; petiole with lateral margins sharply defined *Phyracaces*, Emery.

GENUS CERAPACHYS.

Smith, Journ. Proc. Linn. Soc. Zool., ii., p. 74, 1857.

Characters.

♂. Head emarginate posteriorly and the posterior angles prominent. Clypeus very short and fused with frontal carinae, which are short and close together; the latter do not cover the insertion of the antennae. The antennal socket (or more accurately, the space on the front of the head surrounding the socket) is limited laterally by a carina. Antennae with 9 to 12 joints, the terminal joint large and forming a club, and at least as long as the three preceding joints together.

* Except in *Ophthalmopone*, in which the insertion is almost bare.

Thorax without, or with indistinct sutures. Lateral margins of the petiole not sharply defined. The 1st abdominal segment sharply constricted off from the 2nd. The latter as long as the succeeding segments taken together.

♀. Winged and resembling the worker, or apterous and ergatoid.

♂. Antennae of 13 joints; anterior wings with only one complete (closed) cubital cell.

Key to the ♀ ♀ of Cerapachys.

- (4). 1. Eyes absent, small reddish yellow species.
- (3). 2. First abdominal segment wider than long, nearly as wide behind as the 2nd segment *Wroughtoni*, Forel, v. *rhodesiana*.
- (2). 3. 1st abdominal segment as long as wide, distinctly narrower than the 2nd segment *Wroughtoni*, Forel.
- (1). 4. Eyes present, black or brownish species.
- (6). 5. Punctuation of head, thorax, petiole, and 1st abdominal segment dense and very large; posterior dorsal margin of the petiole bisinuate.
Cooperi, Arnold.
- (5). 6. Punctuation small and not very dense; posterior dorsal margin of petiole straight.
- (8). 7. Body black and very shining, sparsely punctured, pubescence and pilosity scanty *cribrinodis*, Emery, v. *natalensis*, Forel.
- (7). 8. Body castaneous brown, not very shining, more closely punctured, pubescence and pilosity rather abundant *Peringueyi*, Emery.

C. CRIBRINODIS, Emery.

Ann. Soc. Ent. Belg., vol. 43, p. 463, ♀, 1899.

"♀. 3·7 to 4 mm. Blackish brown, shining; the front of the head, mandibles, antennae, tarsi, and apex of abdomen rusty red, last joint of antennae and tarsi ferruginous.

Head a little longer than wide, the sides rounded, as wide in front as behind and widely emarginate posteriorly; the posterior angles subacute. The eyes large and flat, inserted in about the middle of the sides of the head: the frontal carinae fused with the clypeus, forming on each side a projecting lobe, itself bilobed anteriorly. The antennae are therefore placed farther forwards than in other species of the genus; the frontal carinae are parallel in front, high and close together, but separated by a groove; posteriorly they are fused together and abruptly terminated by a depression continuous with the antennal sockets. The genal carinae are raised anteriorly into a prominence, below which is a depression sufficiently large to accommodate the scape when the latter is directed forwards.

Mandibles narrow, their apical margin very oblique, with four

small and obtuse teeth at the base, and a larger obtuse tooth in the middle of the basal margin.

Antennae 12-jointed, the scape reaches back to the posterior edge of the eyes. All the joints of the flagellum are broader than long, except the terminal joint which is as long as the four preceding taken together.

The thorax is parallel-sided, depressed dorsally but not marginate and without trace of sutures; the declivity of the epinotum finely marginate.

Head and thorax smooth, sparsely and finely punctured, a hair being inserted in each puncture. The puncturation of the petiole is much coarser, that of the 1st abdominal segment a little smaller, the rest of the abdomen finely punctured. The petiole is half as wide again as long, truncate anteriorly and posteriorly, round above and not marginate; below and in front there is a large rounded projection.

The 1st abdominal segment is as wide at its base as the posterior edge of the petiole, widening towards the apex; the 2nd segment is longer than the petiole, but the 2nd and following segments are together shorter than the petiole plus the 1st segment. The legs are hirsute.

Hab. Cameroons."

The type species does not occur in our region, but I have thought it best to reproduce the original description which applies in the main to the following variety.

Var. NATALENSIS, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 423, 1910.

♂. This is a little larger than the type, and has the petiole sparsely punctured.

Hab. Natal.

C. PERINGUEYI, Emery. (Plate I., fig. 1, 1a.)

Bull. Soc. Ent. Ital., vol. 18, p. 335, ♀, 1886.

♂. 4 mm. Castaneous brown, scape, apical joint of flagellum and legs ferruginous. In some specimens the head and abdomen darker, almost piceous. Shining; thorax, petiole and 1st abdominal segment largely and coarsely punctured, the punctures of the petiole being particularly large. Head and 2nd abdominal segment with smaller and more abundant punctures, the remaining abdominal segments finely and sparsely punctured; antennae finely and closely punctured. The whole body covered with rather long whitish recumbent hairs,

densest on the apical margins of the abdominal segments. Head longer than wide, convex above, moderately emarginate behind, posterior angles sub-acute, sides convex. Eyes rather large, situated a little in front of the middle of the sides of the head. Clypeus narrow and sloping inwards. Frontal carinae very narrow and raised, continued in front (along the margin of the clypeus), round to the antennal socket; above, the carinae are angularly bent near their middle, then converge and end abruptly. There is a semicircular carina on each cheek, externally.

The scape, strongly incrassate towards the apex, hardly reaches to the posterior margin of the eyes: 1st to 10th joints of the flagellum wider than long, apical joint much longer than wide, as long as the 6th-10th joints taken together.

Thorax slightly narrowed in the middle, submarginate anteriorly, with pronounced anterior lateral angles, all the sutures obliterated, the sides seen from above moderately convex; the thorax is as long as, or only very little longer than the petiole and 1st abdominal segment taken together. The declivity of the epinotum vertical and bounded by a feebly raised margin. Petiole wider than long, slightly narrower in front than behind, convex above, moderately so at the sides, vertically truncate in front and behind.

First abdominal segment wider behind than in front, one-fifth longer than the petiole, convex above and at the sides; the constriction between the 1st and 2nd abdominal segments deep and strong; 2nd segment one-quarter longer than the 1st, globose, and with the sides very convex. The ventral lamella of the petiole is produced anteriorly and is sharply truncate.

Hab. Cape. (G.A., S.A.M., R.M. colls.)

Var. *LATIUSCULA*, Emery.

Ann. Soc. Ent. France, vol. 63, p. 19, 1895.

♂. 4 mm. This differs from the type in its slightly larger size, and in having the petiole broader by one-quarter than it is long, the 1st abdominal segment is also a little broader. The puncturation is also slightly closer and larger.

Hab. Makapan.

C. *COOPERI*, n. sp.

♂. 3.3 mm. Piceous, clypeus and anterior part of the head a little lighter; mandibles, antennae, and legs yellowish red. The whole body, including the tibiae, femora, and antennae covered with long, yellowish, semi-recumbent hairs, the pilosity being more plentiful

and longer than in *Peringueyi* or *cribrinodis*. The whole body subnitidulous, the head above, thorax, petiole, and 1st abdominal segment closely and coarsely punctured. The punctures on the head are smaller and more regular than elsewhere; the cheeks below the eyes are smooth and impunctate. The puncturation of the thorax becomes coarser towards the posterior end. The punctures of the petiole and 1st abdominal segment are large and deep, but strongest on the petiole. The declivity of the epinotum, and the anterior and posterior faces of the petiole are smooth and shining. The 2nd abdominal segment is evenly but sparsely punctured, the punctures being smaller than those on the head; the margins of the remaining abdominal segments, the scape of the antenna and the legs sparsely punctured. The head is a little longer than wide, a little narrower in front than behind, with the sides moderately convex and the posterior margin straight. The eyes, situated in the middle of the sides of the head, are more convex than in *C. Peringueyi*. The mandibles are very finely denticulate on the masticatory margin. Antennae 12-jointed, the scape strongly incrassate towards the apex and not reaching back quite as far as the posterior margin of the eyes. The one-jointed club is more globose and comparatively larger than in our other species, and is as long as the 2-10 joints of the flagellum together; the latter are twice as wide as long, and the 1st joint is as wide as long. The angles terminating the genal carinae are more prominent, but otherwise the characters of the head are similar to those of *C. Peringueyi*. The thorax is flatter above than in that species, and much more distinctly wider behind than in front. The declivity of the epinotum is nearly vertical, strongly margined above, less strongly at the sides, the junction of the dorsal and lateral margins being produced into a small and inconspicuous angle on each side. The petiole is slightly wider behind than in front and moderately convex above from side to side; the sides are almost straight or only feebly convex, the anterior and posterior faces vertical, the anterior dorsal margin straight, the posterior margin above bisinuate so as to form a median and two lateral rounded angles. The first abdominal segment is nearly half as wide again as long, the 2nd segment as wide as long. Otherwise like *C. Peringueyi*.

♀. 4 mm. Similar to the ♂ except for the usual sexual differences. The pro-mesonotal suture is unusually angular, so that the mesonotum and scutellum together, seen from above, have the outline of a lozenge. The mesonotum is strongly but sparsely punctured, smooth, and shining between the punctures. The dorsum of the epinotum is

three times as wide as long. Tegulae ferruginous, wings pale yellowish, the nervures and stigma a little darker.

Umgeni, Durban. (C. B. Cooper.) The types in my collection. (S.A.M., R.M. coll.)

The strong puncturation, especially of the petiole and 1st abdominal segment, the longer and more prominent club, and the bisinuate posterior dorsal margin of the petiole suffice to distinguish this species from all the other members of the genus in South Africa.

C. WROUGHTONI, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 422, ♂, 1910.

" ♂. 2-2.3 mm. Mandibles smooth, punctured, narrow, and with terminal margin oblique. The insertion of each antenna lies in a depression bounded externally by a lateral carina concave inwards, internally by the frontal carina, and posteriorly by a transverse ridge which joins the lateral and frontal carinae. Head rectangular, one and a quarter times as long as wide, sides convex, as wide at the back as in front, and with a lateral raised margin on each side of the occiput. Eyes absent.

Scape thick, hardly reaching the middle of the head; 1st joint of the flagellum broader than long, 2nd-6th joints twice as broad as long, last joint slightly swollen and as long as the four preceding joints together.

Dorsum of thorax sub-depressed, faintly and obtusely marginate and about three times as long as wide. Pronotum and epinotum of about equal size; mesonotum shorter and narrower; declivity of the epinotum sub-vertical, smooth, and marginate at the sides and above. Petiole seen from above, almost square, corners rounded, as long as wide. First segment of abdomen also almost square, one and a half times as long and as wide as the petiole, and with apical margin straight. The articular portions between the 1st and 2nd segments form a stridulatory surface. The whole body and legs smooth and shining, largely and clearly punctured; of a reddish-yellow colour and covered with a yellowish, short and oblique pubescence."

Hab. Natal. (R. Wroughton.) (G.A., S.A.M.)

Var. RHODESIANA, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 112, ♂, 1913.

2.8 mm. This differs from the type in its larger size, in the shape of the node which is wider than long (in the type as long as wide),

in the less developed carina above the base of the antennae, and in the much less distinct pro-mesonotal suture. The 1st segment of the abdomen is also much wider than long, whereas in the type it is as wide as long. The thorax is also a little shorter.

Hab. Bulawayo. (G.A. coll.)

GENUS PHYRACACES, Emery.

Rend. Accad. Sc. Bologna, p. 27, 1901.

Characters.

♂ and ♀. Antennae 12-jointed, apical joint not clubbed and not longer than the two preceding together. Petiole, and sometimes the 1st abdominal segment with distinctly defined lateral margins. Eyes in the ♂ large, otherwise resembling *Cerapachys*.

♂. Unknown.

This small genus, with the exception of two species from Madagascar and the two described below, is confined to the Australian region.

P. BRAUNSI, Emery.

Loc. cit.

“♂. 3.5 mm. Piceous; mouth, antennae, apex of abdomen a little lighter, shining, with numerous fine hairs which are most abundant on the abdomen. Pubescence on the legs obliquely exserted, scape with some long hairs; all the body finely punctured, more densely so on the abdomen.

Head with rounded sides and with the occipital margin almost straight, or arcuate; the eyes occupy a little less than one-half of the sides. The mandible, narrow at the base, gradually enlarges towards the masticatory margin which is obtusely dentelate on the buccal portion. The frontal carinae are raised and parallel, but dip down and converge abruptly posteriorly. The scape does not extend further back than the eye, is shorter than the half of the flagellum, and is incrassate towards its apex; the 2nd-6th joints of the flagellum are wider than long, the terminal joint being longer than the preceding but not wider.

Thorax short and stout; the declivity of the epinotum marginate. Petiole with sharp, lateral margins, seen from above, much wider than long, the anterior face fairly straight, the sides arcuate, and the

posterior margin deeply excavated below the lateral angles, which project backwards and are rounded.

The 1st abdominal segment is wider and longer than the petiole, but less than the following segment, and is rounded at the sides.

Hab. Willowmore, Cape Prov. (Brauns.)”

✓
P. COOPERI, n. sp.

♂. 4.2–4.5 mm. Black, femora and mandibles piceous, tibiae, tarsi, and antennae dark ferruginous. Petiole, abdomen, and legs with a very sparse pale pubescence. Whole body with a scanty pilosity of long, whitish yellow oblique hairs, more abundant on the abdomen, shorter and denser on the legs. Whole body shining, head and thorax particularly so. The head is smooth and impunctate between the eyes and below them, rugoso-punctate between the frontal and genal carinae, and above, from the posterior margin of the eyes to the occipital margin, coarsely and irregularly punctate. The thorax is punctate-striate anteriorly and posteriorly, almost impunctate in the middle except at the lateral margins where there are a few large punctures. The petiole and 1st abdominal segment are closely and strongly punctured, the punctures are large, and on the petiole somewhat elongated. The 2nd abdominal segment is closely and rather finely punctured, the punctures being much smaller and more even than those of the 1st segment; 3rd–5th segments finely punctured but less densely than the 2nd segment.

Head a little longer than wide, narrower in front of the eyes than behind them, sides moderately convex, occipital margin concave, posterior angles sub-acute. Eyes convex, occupying a little more than one-quarter of the sides of the head, and situated somewhat dorsally just within the anterior half of the head. Frontal carinae considerably raised and parallel, convergent posteriorly and meeting at a point at a level with the anterior margin of the eyes. Seen from the side, the profile of the carinae is strongly convex in its anterior half, then shallowly concave for a quarter of its length and straight along its posterior quarter. The posterior margin of the clypeus is raised, and meets on each side a low genal carina which runs forward from the inner margin of each eye, and forms with it a distinct angle or tooth, just above the base of the mandibles. A shallow crenate groove surrounds the posterior two-thirds of the eye, and is continued below it to the base of the mandible. Antennae

12-jointed; the scape extends very slightly beyond the posterior margin of the eyes, it is strongly incrassate towards the apex, and is longer than half the flagellum, or as long as the 1st-9th joints together; the 2nd-9th joints of the flagellum wider than long, the apical joint not wider than, but about as long as the two preceding joints taken together. Mandibles triangular, masticatory margin concave and without teeth. Thorax without trace of sutures, twice as long as wide, widest at its posterior fourth, margined above, very distinctly so anteriorly and posteriorly, but less so at the sides. Seen in profile, the dorsum of the thorax is decidedly convex longitudinally, and the sides are vertical. The declivity is almost vertical and strongly margined all round. The petiole is sharply margined above, and three-quarters as wide again as long; the anterior face is vertical, the anterior dorsal margin almost straight, the sides are moderately convex, the posterior margin depressed, and the posterior lateral angles are raised and form a blunt triangular tooth on each side. The 1st abdominal segment is as wide as the petiole, a trifle wider than long, the sides parallel; the sides are somewhat angularly but obtusely delimited from the dorsum, but not marginate. The 2nd abdominal segment hardly longer, but one-quarter wider than the 1st. Posterior metatarsi longer than the tibiae.

Nesting under the roots of a tree. Umgeni, Durban. (C. B. Cooper.)

This species appears to differ from *P. Braunsi*, which is known to me only from the description, by its larger size, smaller eyes, longer scape, and much stronger puncturation.

Type in my collection. (R.M., S.A.M. and G.A. colls.)

TRIBE CYLINDROMYRMICINI, Emery.

Characters.

♂ and ♀. Frontal carinae elongate and projecting laterally so as to form a short scrobe into which the base of the scape can be inserted. Eyes large, at least one ocellus in the ♂. Body elongate. Pygidium furnished laterally with short stumpy spines.

♂. Antennae 13-jointed; scape short, 1st joint of flagellum very short, the following joints longer than wide.

This tribe includes two genera, *Cylindromyrmex*, Mayr, which is confined to South America, and *Simopone*, Forel, of which 5 species

are known, 3 being recorded from Madagascar and 2 from Africa, viz., *S. conradti*, Emery, from the Cameroons, and the new species described below.

GENUS SIMOPONE, Forel.

In Grandidier's Hist. Madagascar, vol. 20, p. 139, 1891.

Characters.

♂. Body more or less cylindrical; head parallel-sided. Antennae 11-jointed, scape very flattened and strongly incrassate towards the apex. Thoracic sutures usually indistinct. Petiole articulated to the 1st abdominal segment by a narrow surface. The constriction between the 1st and 2nd abdominal segments very wide and rather low down. Legs short; claws dentate or pectinate.

♀. Unknown.

♂. Clypeus very short; frontal carinae convergent behind and separated by a longitudinal sulcus. Mandibles triangular and edentate. Antennae 13-jointed, scape short and thick, 1st joint of flagellum very small. Mayrian furrows on the mesonotum strongly defined. Petiole nodiform; the constriction between the 1st and 2nd abdominal segments very strong. Anterior wings with two cubital cells, not completely closed.

SIMOPONE MARLEYI, n. sp.

✓ ♀. 7 mm. Reddish ochreous yellow, mandibles and flagellum a little darker, apical segment of abdomen except at its extreme base, and the articular surface between the 1st and 2nd abdominal segments, black. Posterior half of thorax, petiole, legs and scape very shining, the rest of the body moderately shining. Head, thorax, petiole and 1st-4th abdominal segments sparsely and shallowly punctured; the punctures are ill-defined and largest on the head, smallest on the abdomen. The legs, antennae and mandibles are sparsely and finely punctured. The anterior half of the head is microscopically longitudinally striate. The pubescence is sparse and consists of short recumbent golden hairs. It is more abundant on the 1st and 2nd segments of the abdomen, and very scanty on the head and thorax. The apical margins of the petiole and abdomen, and the sides of the apical segment bear some longer and thicker hairs; legs and antennae very sparsely pubescent.

Head slightly narrower in front than behind, almost one-third longer than wide, sides moderately convex, posterior margin feebly

arcuate, posterior angles rounded. Clypeus smooth and without carinae, sloping inwards, fused posteriorly in the middle with the frontal area; its posterior margin is raised, and bears on each side just below and external to the frontal carinae, a rounded, prominent tubercle which projects over the mandible when looked at from the side. The frontal carinae are flattened and produced into a rounded lobe in front, they diverge in front and behind and terminate at a point on a level with the anterior margins of the eyes. The latter are very large. The ocelli are very small; the space between them is fuscous. The mandibles are triangular, very convex dorsally, the external margin shallowly concave, the masticatory margin edentate. The scape of the antenna is strongly compressed dorso-ventrally, widest at the apex and almost triangular, or twice as long as the apical width; it just reaches back as far as the anterior margin of the eyes. The flagellum is 10-jointed, the 1st joint is about as long as wide, the 2nd-9th joints much wider than long, the apical joint longer than wide, and half as long again as the preceding.

The thorax is parallel-sided, its dorsum is flat longitudinally and feebly convex from side to side. The pro-mesonotal suture fairly distinct, the meso-epinotal ill-defined. The pronotum is distinctly margined anteriorly by a dark raised line; the declivity of the epinotum is similarly margined above and at the sides. The petiole is wider behind than in front and feebly convex above. The anterior face of the node is vertical and slightly concave; it is margined above by a fine but very distinct and dark raised line, which is continued along the sides inferiorly to the dorsal margin of the posterior face; the posterior angles are produced backwards, so that the posterior margin is arcuate. The 1st abdominal segment is at least one-third longer than the petiole, and as wide as long; it is separated from the 2nd segment by a wide and deep constriction; the 3rd and following segments are wider than long. The pygidium is produced at the apex into a bidentate projection. Behind this projection the pygidial area of the 5th segment is flattened, smooth and shining in the centre, rugoso-punctate at the sides and armed on each lateral margin with six short spines or teeth (see figs. 46, 46a, Plate V.). Legs short, posterior metatarsi as long as the tibiae and nearly as wide.

Three specimens were found by Mr. Marley in hollow stems of the castor-oil plant, Stella Bush, Durban. At first glance this species bears a deceptive resemblance to *Sima natalensis*, Smith. The type in my collection.

SECTION PROPONERINAE, Emery.

TRIBE PLATYTHYREINI, Emery.

Comprising only the following genus.

GENUS PLATYTHYREA, Roger.

Berlin Ent. Zeitschr., vol. 7, p. 172, 1863.

Characters.

♂. Whole body finely punctured, covered with a pruinose pubescence. Clypeus flat and indistinctly defined posteriorly; frontal area generally indistinct; frontal carinae widely separated, thick and dilated in front. Mandibles triangular, with the masticatory edge large, finely dentate or without teeth. Maxillary palps 6-jointed, labial palps 4-jointed. Antennae 12-jointed, eyes moderately large, no ocelli. The pro-mesothoracic suture slightly mobile, the rest of the thorax completely fused together. Petiole large but not squamiform, narrowly articulated to the 1st abdominal segment at about the centre of the latter, the abdominal constriction not very deep. Middle and posterior tibiae with two calcaria; claws unidentate.

♀. Winged; resembling the worker but slightly larger; eyes larger and ocelli present: pronotum large, mesonotum depressed.

♂. Clypeus more convex than in the ♀; frontal carinae not dilated in front; mandibles triangular. Antennae 13-jointed, scape slightly shorter than the 3rd joint. Eyes and ocelli very large.

Pronotum large, not covered by the mesonotum, the latter not very convex, and with Mayrian furrows indistinct. Wings with 2 cubital cells. Petiole as in the ♀. Pygidium rounded, cerci present.

Key to the ♂ ♀ of Platythyrea.

- (10). 1. Dorsum of mesonotum as high as, or higher than the epinotum; constriction between the 1st and 2nd abdominal segments moderate.
- (7). 2. Node of petiole with the posterior dorsal margin produced on each side into a more or less distinct tooth.
- (4). 3. Larger species, 14–16.5 mm. Whole body black ... *cribrinodis*, Gerst.
- (3). 4. Smaller species, less than 10 mm., legs and antennae red.
- (6). 5. Posterior dorsal margin of node with a median rounded tooth, longer than the lateral angles; puncturation feeble, 7 mm.
Mocquerysi, Emery, var. *matopoensis*, Arnold.
- (5). 6. Posterior dorsal margin of node without a median rounded tooth; puncturation moderately strong, 8.5–9.5 mm. ... *Schultzei*, Forel.
- (2). 7. Node of petiole without lateral dorsal teeth on the posterior margin.

- (8). 8. Larger species, 12–13 mm. Node at least twice as long as wide.
Arnoldi, Forel.
- (8). 9. Smaller species, 6·5 mm. Node not more than half as long again as wide.
Cooperi, Arnold.
- (1.) 10. Dorsum of the mesonotum on a lower level than that of the epinotum ;
 constriction between the 1st and 2nd abdominal segments very strong.
- (12). 11. Node of petiole truncate posteriorly *lamellosa*, Roger.
- (11). 12. Node of petiole rounded posteriorly.
lamellosa, Roger, race *longinoda*, Forel, and var. *rhodesiana*, Forel.

P. CRIBRINODIS, Gerstaecker. (Plate I., fig. 4.)

Monatsb. Akad. Wiss. Berlin, 8, p. 504, 1858. Emery, Ann.
 Mus. Stor. Nat. Genoa, vol. 37, p. 154, ♂, 1896 ?. Forel,
 Deutsch. Ent. Zeitschr. Beiheft, p. 208, ♂, 1913.

♀. 14–16·5 mm. Black and dull, calcaria and last two joints of the tarsi ferruginous. Whole body covered with an exceedingly fine pruinose pubescence, yellow and somewhat longer on the clypeus ; apical abdominal segment clothed with short reddish-yellow hairs ; apex of anterior tibiae and anterior tarsus beneath clothed with short golden hairs.

The head (excluding clypeus and anterior half of frontal carinae), thorax, node of petiole and 1st abdominal segment, punctured ; the spaces between the punctures are microscopically rugulose, the punctures are fairly evenly distributed, round and shining, and the floor of each puncture is pitted with two or three minute points. The punctures are larger and closer on the posterior half of the head and on the node. 2nd to 5th abdominal segments rugulose but impunctate.

Head with posterior angles well defined, occipital margin straight, sides moderately convex. Eyes of medium size, situated at about the middle of the sides of the head. Mandibles triangular, slightly shining, and striato-punctate. Posterior margin of clypeus indistinct, but produced into a wide angle between the frontal carinae. The latter are broad in front and flat, much narrower and convergent behind. The scape reaches beyond the occipital margin. The flagellum is as long as the thorax, with the 2nd joint longer than the 3rd.

Pronotum wider than long, anterior margin arcuate and with prominent anterior angles. Pro-mesonotal suture well defined, meso-metanotal suture absent.

The epinotum has a short triangular and blunt tooth on each side above the declivity ; the latter is very steep, excavated, and with the dorsal margin considerably raised, the lateral margins less so. Node

of petiole longer than wide, distinctly wider behind than in front, slightly convex, rounded above and truncate in front and behind; the posterior dorsal margin is bi-emarginate, so as to form a tooth on each side and a median obtuse angle. The ventral lamella of the petiole is produced anteriorly into a truncated lobe. First abdominal segment narrower at the base than at the apex, a little shorter and narrower than the 2nd segment. Abdominal constriction distinct.

♂. 13.5 mm. Black, pruinose pubescence as in the ♀. On the head, epinotum, and petiole the puncturation is much sparser than in the ♀; the 1st abdominal segment is sparsely and very shallowly punctured, so as to appear almost impunctate. Mesonotum strongly punctured in its basal half, scutellum feebly punctured. Head somewhat triangular, occipital margin straight, posterior angles rounded. Eyes very large and prominent; ocelli large but not raised. The frontal carinae reach far back, frontal area distinct. Clypeus convex, posterior margin very ill-defined. Mandibles large, sinuate externally, masticatory margin obtusely denticulate, the apex incurved. The antennae reach back as far as the posterior extremity of the thorax; the scape is slightly shorter than the 2nd joint of the filiform flagellum; the 1st joint of the latter is very short.

Pronotum exposed, one-third as long as the mesonotum, and with a short lateral fovea on each side of the apical margin; the parapsidal areas are marked off by a raised line. The declivity of the epinotum sub-concave and marginate, the dorsal lateral teeth very much reduced. The petiole is like that of the ♀ but is less distinctly truncate posteriorly, and the posterior dorsal margin is only sub-angular and not toothed on each side. The abdomen is as in the ♀. Pygidium with apex rounded. Wings smoky, especially round the stigma; nervures pale brown, stigma dark brown, legs slender.

Hab. Southern Rhodesia. (G.A., S.A.M., R.M. colls.)

✓ Var. PUNCTATA, n. v.

This variety differs from the type in having the posterior region of the head, the pronotum and epinotum more densely punctured. The node of the petiole is as wide in front as behind, the posterior lateral teeth shorter and more obtuse, and the ventral lamella acute anteriorly, the apex of the projection not being truncate as in the type.

Hab. Victoria Falls. (G.A., S.A.M.)

P. SCHULTZEI, Forel.

Schultze, Zool. Anthrop. Reise Südafrika, vol. 4, p. 3, 1910.

"♂. 8.5–9.5 mm. Black, mandibles, frontal carinae, antennae and legs red. Mandibles moderately shining, exceedingly finely rugulose, punctured, and with the anterior margin sharp. Clypeus with anterior margin feebly and obtusely projecting, posterior margin prominent and distinct between the frontal carinae. The latter are strongly curved and convex exteriorly. Head trapezoid, slightly wider behind than in front, feebly concave posteriorly and a little longer than wide. The eyes are situated a little in front of the middle of the sides, moderately convex and occupying nearly one-quarter of the sides of the head. Scape flattened at the apex, and nearly reaching beyond the back of the head to the extent of its own width; 2nd joint of flagellum longer than the 1st and 3rd, 6th–10th joints slightly wider than long, the rest longer than wide.

Thorax constricted a little posteriorly, anterior angles obtuse. Pro-mesonotal suture distinct, with traces of sutures behind the meso- and the metanotum. Basal area of epinotum convex, somewhat longer than the declivity, which is terminated above by two flat, triangular teeth. Petiole longer than wide, slightly wider behind than in front, convex above, vertical in front and behind, the posterior margin convex in the middle and dentate laterally. Ventral lamella projecting longitudinally.

Abdomen feebly constricted, 2nd segment as long and as wide as the 1st.

The whole body, including the legs and antennae fairly densely reticulate-punctate and slightly shining; intermixed, are some rather coarse and shallow punctures, especially on the head. The coarse puncturation is absent on the clypeus, frontal carinae, legs, and abdomen, excepting the 1st segment. Finely and sparsely covered with yellow pubescence. Pygidium with short yellow hairs.

Hab. Hereroland, Windhoek, G.S.W. Africa. (Schultze.)"
Lonely Mine, S. Rhodesia. (Dr. Swale.) (G.A., coll.)

P. LAMELLOSA, Roger.

Berlin Ent. Zeitschr., 4, p. 295, ♀, 1860.

"♀. 12.5 mm. Black, dull, and pruinose, antennae and legs brown-black, mandibles and tarsi red.

Head quadrangular, only slightly narrower behind than in front. Eyes moderately convex and situated at about the middle of the sides of the head. Frontal carinae broad and fused with the clypeus,

which is rounded anteriorly and flat. The scape projects beyond the back of the head, and is gradually thickened from the middle to the apex. The flagellum is 11-jointed, the 2nd joint is one-third longer than the 1st, the rest progressively shorter, except the last joint which is only slightly longer than the preceding. Mandibles short and triangular, curved in front and below, convex above, finely rugose and edentate. The whole body is finely rugulose, with a few coarse punctures.

Pronotum rounded at the sides, anterior angles obsolete, slightly arched dorsally and separated from the mesonotum by a deep suture. Meso- and metanotum fused. The declivity of the epinotum is steep, shallowly excavated, with two small obtuse teeth close together on the upper margin. The puncturation of the thorax is similar to that of the head, but somewhat more strongly punctured on the prothorax and the pleurae. Petiole seen from above cylindrical, longer than it is wide or deep, rounded in front, abruptly truncated behind and coarsely punctured all over. Ventral lamella anteriorly, with a tooth-like projection, truncated at its apex. The 1st abdominal segment anteriorly moderately truncate but without a distinct edge, broader than long, campaniform, constricted at its apex; 2nd segment wider than long, longer than the 1st, both segments finely punctured.

The legs are long; posterior tibiae with 2 calcaria, the outer pectinate. Metatarsi much shorter than the tibiae, and slightly shorter than the tarsi together. Anterior tarsi and metatarsi with thick golden pubescence beneath. A few erect hairs occur on the last abdominal segment."

Hab. Cape Province. (G.A., S.A.M. colls.)

Sub-sp. *LONGINODA*, Forel.

Mitt. Schweiz. Ent. Ges., vol. 9, p. 75, 8, 1894.

"Like the type, but as far as I can judge from Roger's description without seeing the type, differing in the following characters. Mandibles with 3 to 4 teeth, separated from each other. Head rectangular, longer than wide. Mesonotum wider than long, very short, and separated from the metanotum by a plainly visible even if somewhat indistinct suture. The mesonotum is fairly flat and depressed, lying at a lower level than the pro- and mesonota. Declivity of the epinotum excavated, the margins sharply defined, above with two very stumpy rounded bosses (in place of teeth). Petiole cylindrical, more than twice as long as wide, hardly wider

behind than in front, roundly truncate in front and behind. Punctuation similar to that of *P. cribrinodis*.

Valdezia, Transvaal. (Rev. P. Berthoud.)"

Race *longinoda*. Var. RHODESIANA, Forel. (Plate I., fig. 3.)

Ann. Soc. Ent. Belg., vol. 57, iv. p. 110, ♂ ♂, 1913. Ibid., p. 347, ♀, 1913.

♂. 12-13 mm. This variety differs from *lamellosa*, in being more finely punctured, especially on the petiole; the latter is almost twice as long as wide, and is widest in its posterior half, whereas in the type it is hardly more than one-quarter as long again as wide, and is widest in the middle; the projection of the ventral lamella is smaller and more acute, not widely truncated at the apex as in the type; the two obtuse tubercles or teeth of the epinotum are also much less prominent in this variety. It differs from race *longinoda* by its stronger punctuation, its larger size, the slightly longer petiole, and the greater width of the head behind.

"♀. 14 mm. Almost identical with the ♂. Thorax nearly as wide as the head. Mesonotum and scutellum short. The teeth of the epinotum broader and more noticeable than in the ♂; otherwise identical, but the antennae, tarsi, and mandibles are distinctly reddish. Deälated."

♂. 13.5 mm. Black, tarsi brown, extreme base of scape ferruginous. Pruinoso pubescence as in the ♀. Whole body finely rugulose and irregularly punctured with small shining punctures, most abundant on the head and thorax, sparser and much shallower on the abdomen. Head, including the mandibles, nearly half as long again as wide, widest across the eyes, posterior angles considerably rounded. Clypeus large and convex, posterior margin clearly defined. Mandibles large, triangular, shining and finely punctured; masticatory margin denticulate, with an elongate sub-apical tooth, apex incurved and moderately acute. Antennae reach back as far as the base of the 1st abdominal segment; the scape is very nearly as long as the 2nd joint of flagellum; the 1st joint of the latter is very short, not one-third as long as the scape; 2nd-10th joints sinuate externally, so that they are all much wider at the apex than at the base. Frontal carinae wide. Eyes large and convex, the ocelli situated on a raised area.

Pronotum exposed, sides slightly concave, anterior margin round; pro-mesonotal suture distinct. Mesonotum very convex in front, flatter at the base, and raised well above the level of the pronotum.

Mayrian furrows well defined, and with a short shallow groove between the fork. Scutellum triangular, very gibbous and seen from the side, much higher than the mesonotum. Epinotum as long as the meso- and metanotum together, the dorsum is sloping and moderately convex; the declivity is short and gradual, excavated dorso-ventrally, shining and bounded by a raised margin all round. Petiole long, two and a half times as long as wide, widest a little before the apex, the extreme base is angularly emarginate above, with the angles raised into two small flaps. Seen from the side, the petiole is convex above and concave below. The ventral lamella is produced into a small blunt angle at the extreme base. First abdominal segment almost triangular, the apical margin is quite four times as wide as the basal. 2nd abdominal segment is as long as the 1st, wider than long and moderately convex at the sides. Pygidium sub-acute. The apical third of the posterior wings, and two-thirds of the anterior wings externally, dark fuscous; stigma and nervures dark brown. Legs long and slender.

Hab. S. Rhodesia. The nest of this species is so distinctive that it cannot be mistaken for that of any of our other Ponerinae. The entrance is surmounted by a dome, from 6 to 8 inches high, by about 12 inches broad at the base. The dome is built up of very even-sized small pebbles, about 5 to 8 mm. in their largest diameter. The entrance is situated in the centre above, and this is generally the only entrance, very exceptionally there may be a smaller and less regular opening at the base of the mound. The type form appears to be replaced entirely throughout S. Rhodesia by this race. (G.A., S.A.M., R.M. colls.)

P. ARNOLDI, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 206, ♀, 1913.

♀. 12-13 mm. Black, mandibles castaneous red. At first glance this species is not unlike *lamellosa*, especially var. *rhodesiana* of the race *longinoda*. It can, however, easily be distinguished from those three forms by the structure of the dorsum of the mesonotum, which is as high as the epinotum, and not on a lower level as in those forms. The 2nd segment of the abdomen is longer than wide, and is not wider than the 1st, whereas in *lamellosa* the 2nd segment is wider than the 1st, and distinctly wider than long, and the inter-segmental constriction is much more pronounced.

The apex of the abdomen clothed with rufous hairs, otherwise the pubescence and pilosity as in *lamellosa*, var. *rhodesiana*. As in the latter, the whole body is microscopically rugulose, but the

head is less closely punctured, and the pro- and mesonotum dorsally, and abdomen, are almost impunctate. The epinotum has some punctures, large and very shallow on the dorsum, but smaller and deeper at the sides; the sides of the petiole are rather strongly punctured. Mandibles shining and punctate-striate, masticatory margin concave, apex acute but not ending in a tooth. The eyes are larger and flatter and placed farther forwards than in *lamellosa-rhodesiana*, and the head is not very noticeably wider than the pronotum. The epinotum is not unlike that of *lamellosa*, but the dorsum is wider and flatter, and the declivity is distinctly and rather sharply margined laterally and above, the margin above ending on each side in a rounded angle, hardly large enough to be called a tooth. The dorsum of the thorax is slightly angularly marked off from the sides, *i.e.* sub-marginate. The declivity of the epinotum is less sloping than in *lamellosa*. The node of the petiole, seen from above, is twice as long as wide, slightly concave in the middle of the sides, rising from front to back, rounded in front and truncate behind; the posterior face is moderately concave and feebly margined all round; the ventral lamella is produced at the extreme base into a blunt triangular tooth.

Abdomen oblong, 1st segment inverted cup-shaped, slightly wider than long; 2nd segment longer than wide, longer but not wider than the 1st, the constriction between the two segments feeble. Legs not so long as in *lamellosa*.

Shiloh, S. Rhodesia. (S.A.M., R.M., G.A. colls.)

I have met with this species on only one occasion. The nest, situated on an open piece of ground, was surmounted by a mound with the entrance at the apex, as in *lamellosa*, v. *rhodesiana*, but unlike that species the mound of *Arnoldi* contains no large pebbles. The surface of the mound was covered with the elytra and carcasses of hundreds of beetles, mostly Tenebrionidae. Workers were seen carrying live beetles to the nest, the prey being held by its mandibles in a position above and parallel to the body of the ant. Since a careful examination of the rubbish-heap of this nest failed to show the remain of other insects, it is probable that this species feeds entirely on Coleoptera, differing in this respect from most of the other members of the genus, which in Rhodesia, at any rate, are eminently termitophagous.

P. COOPERI, n. sp.

♂. 6.5 mm. Brownish black, mandibles, anterior half of head and 3rd-5th abdominal segments brownish red, antennae, coxae, and legs

rust-red; apical margins of 1st and 2nd abdominal segments, and sometimes also the posterior half of thorax, slightly tinged with red. Covered all over with a dense, yellowish recumbent pubescence, less abundant, however, on the flagellum. Pilose hairs entirely absent. Exceedingly finely punctate-striate all over, with a few shallow punctures on the sides of the head above the eyes, the petiole and first two segments of the abdomen. The head much narrower across the clypeal region than elsewhere, looks apparently much longer than wide, it is, however only one-sixth longer than its greatest width, *i.e.* across the eyes. The sides of the head are almost straight, but the eyes project considerably beyond the level of the same; the posterior angles of the head are rounded, the posterior margin moderately arcuate. The eyes are large and situated at about the middle of the sides. The clypeus is approximately triangular, the posterior margin hardly distinguishable, the anterior margin straight. The frontal carinae are very wide, obtusely angular above the insertion of the antennae (behind which they are a little wider even than in front), nearly parallel, not convergent posteriorly, and extending back to about the level of the middle of the eyes. A shallow depression extends from the posterior margin of the clypeus to about the middle of the vertex. Mandibles triangular, finely rugulose, edentate, the extreme apex truncate. Scape not reaching the occipital margin, incrassate towards the apex; flagellum about one-third longer than the scape, 1st and 2nd joints subequal, a little longer than wide, 3rd-10th joints a little wider than long, apical joint not quite as long as the 9th and 10th joints together.

The dorsum of the thorax and epinotum is flat or only very feebly convex, and is angularly and obtusely delimited from the sides. Pronotum a little wider in front than behind, as long as wide, the anterior angles or shoulders almost obsolete. Pro-mesonotal suture distinct, the meso-epinotal indicated by a slight depression; the mesonotum is nearly as long as the pronotum, but a trifle narrower. The declivity of the epinotum is almost vertical, angularly emarginate above (Λ -shaped), and distinctly concave; the lateral margins of the declivity rather tumid, forming at the junction with the dorsum a wide and rounded angle at each side. Node of petiole one-third longer than wide, nearly as wide as the epinotum, the sides almost straight, higher and wider behind than in front, the anterior face very rounded, the posterior face vertical and feebly margined. Ventral lamella of the petiole produced at the extreme base into a rounded projection. Abdomen elongate and narrow,

about as long as the thorax, the sides feebly convex. 1st and 2nd segments distinctly longer than wide, 2nd segment longer than the 1st. Legs rather short, anterior femora thick and broad, posterior coxae not toothed.

♂. 6.5 mm. Rust-red, antennae and tarsi yellowish red, eyes black. Punctuation and pubescence as in the ♀, but the punctuation is a little finer, and the pubescence shorter and less dense.

Head, excluding mandibles, as long as it is wide across the eyes. The latter very large, the internal margins sinuate, occupying more than three-quarters of the sides of the head. Mandibles large and shaped as in the ♀. Clypeus similar to that of the ♀, but the posterior margin is more distinctly defined. The frontal area is an elongate triangle, indistinctly defined but continued into the median depression of the vertex, which ends at the anterior ocellus. The ocelli not very large and not situated on a raised area. The frontal carinae are widely divergent behind. Antennae filiform, extending back as far as the 1st abdominal segment; scape short, not longer than the distance separating the two posterior ocelli; 1st joint of flagellum less than half as long as the scape, 2nd joint as long as the third. Pronotum rounded in front and at the sides, at least three times as wide as long. Mesonotum rather flat posteriorly, moderately convex in front and at the sides, not rising very much above the level of the pronotum. Mayrian furrows and parapsidal sutures very distinct. Scutellum a little wider than long, not gibbous. Dorsum of the epinotum much wider at the base than at the apex, where it forms a distinct angle with the declivity. The latter is distinctly margined all round, nearly quadrangular, not vertical as in the ♀, but sloping very obliquely. The node of the petiole is similar to that of the ♀, but is not so high, nor truncated behind, the dorsal profile forming a continuous curve rising from front to back. The abdomen as in the ♀; the pygidium ends in a short curved spine. Legs longer and thinner than in the ♀. Wings smoky, nervures pale brown, stigma black.

Types ♀ and ♂ in the Durban Museum.

Stella Bush, Durban. (C. B. Cooper.)

This species differs from the allied forms, *frontalis*, *modesta*, *tenuis*, Emery, etc., by the entire absence of teeth on the posterior dorsal margin of the node, and by the widely separated frontal carinae. (R.M., S.A.M., G.A. colls.)

P. MOCQUERYSI, Emery.

Bull. Ent. Soc. Ital., vol. 31 p. 270, ♂ ♀, 1900.

Var. MATOPOENSIS, n. v.

♀ 7-7.5 mm. Black, mandibles, clypeus, antennae, legs and apex of the abdomen more or less ferruginous. Pubescence pruinose and rather thin, pilosity absent except on the last segment of the abdomen. Microscopically rugulose, sparsely and shallowly punctured on the head, meso- and epinotum, petiole and first two segments of the abdomen. The pronotum and apical segments of the abdomen with very sparse and minute punctures; the punctures on the sides of the head and on the epinotum are larger and deeper than on the rest of the body. Head sub-quadrate, as long as wide, sides feebly convex, posterior margin almost straight, posterior angles rounded. The anterior margin of the clypeus feebly arcuate, posterior margin indistinct. Mandibles dull, finely punctuate-striate, triangular, external margin convex or very slightly sinuate, masticatory margin finely denticulate. Frontal carinae broad, narrower and slightly convergent behind. Eyes large, their posterior margins lying in front of the middle of the sides of the head. Scape of the antenna reaches back a little beyond the occipital margin; 1st-5th joints very little longer than wide, 6th-10th joints about as long as wide, apical joint half as long again as wide. The pronotum is a little wider than the rest of the thorax, and narrower behind, the sides of the rest of the thorax nearly parallel. Pro-mesonotal suture distinct. The declivity of the epinotum is very steep but not vertical, concave and distinctly margined, the margin above ending on each side in a broad, rounded and stumpy tooth. Node of petiole half as long again as wide, a little longer than high, convex from side to side, a trifle wider behind than in front, anterior face nearly vertical but considerably rounded above, posterior face vertical and produced dorsally into three obtuse teeth, the median tooth being wider and longer than the lateral teeth. Ventral lamella very slightly produced. Abdomen oblong, 1st segment very little longer than wide, 2nd segment longer than the 1st, and one-fifth longer than wide. Legs rather short, posterior coxae armed on the inner margin with a blunt tooth.

Matopo Hills, S. Rhodesia. Type in my collection.

This variety appears to differ from the type form of Madagascar only by the longer node of the petiole.

TRIBE PROCERATIINI, Emery.

Characters.

♂. Frontal carinae do not cover the articulations of the antennae, they are close together and are sometimes even fused into a single vertical lamella which is fused to the clypeus. Mandibles triangular; antennae 9 to 12 joints; eyes small or wanting. Thorax usually without dorsal sutures; petiole nodiform or squamiform; 1st abdominal segment large, separated by a constriction from the 2nd segment which is large and forms the greater part of the abdomen. Tibiae with only one spur; claws simple.

♀. Winged; eyes and ocelli well developed, otherwise resembling the ♂.

♂. Clypeus and frontal carinae much the same as in the ♀; antennae 13-jointed; wings with only one closed cubital cell.

This tribe contains five genera, two of which are represented in South Africa.

1. Clypeus very short, but not projecting in a roof-shaped mass above the mouth; body not filiform, apical segments of abdomen incurved under the 2nd segment and reflected, so that the apex points forwards *Sysphincta*, Roger.
2. Clypeus fused with the frontal carinae and the cheeks, and projecting in a roof-like manner above the mouth; body filiform; apical segments of abdomen straight, not incurved and reflected *Probolomyrmex*, Mayr.

GENUS PROBOLOMYRMEX, Mayr.

Ann. K.K.N.H. Museum, Vienna, vol. 16, p. 2, 1901.

Characters.

♂. Body filiform, head long and narrow. The clypeus is fused with the frontal carinae and the cheeks, forming a projecting ledge over the mouth, in front of the antennae; the frontal carinae, fused in front, are separate behind. The mandibles are hidden by the clypeal projection, and are elongate-triangular and dentate. Antennae 12-jointed; scape long, flagellum claviform but not forming a club of a definite number of joints. Eyes wanting. Thorax without sutures, the declivity of the epinotum surrounded by a raised edge. Node of the petiole compressed, higher behind than in front, longer than wide; ventral lamella produced into a vertical projection, pointing backwards. Abdomen elongate, not reflexed ventrally; a slight constriction between the 1st and 2nd segments.

♀ and ♂. Unknown.

P. FILIFORMIS, Mayr. (Plate I., fig. 2, 2a.)

Loc. cit.

♂. 3 mm. Head nearly twice as long as wide, posterior angles feebly rounded. The anterior portion of the head is produced into a roof-like projection or ledge which reaches as far as or a little beyond the apex of the closed mandibles. This projection is formed by the clypeus and the anterior portion of the fused frontal carinae and all that part of the face which lies between a point a little behind the antennal sockets, and the anterior margin of the clypeus. Viewed from the side, the antennae are seen to be inserted on this ledge half-way between its anterior and posterior limits, and therefore lie above the middle point of the mandibles when the latter are closed. The frontal carinae which arise a little in front of the antennal sockets, leaving them uncovered, are curved inwards, fused together for half their length, diverge again posteriorly and reach to a point about as far back as the base of the mandibles. The fused portion of the carinae forms a rounded and raised crest, lying between the insertion of the antennae. The latter are 12-jointed; the scape, somewhat flattened, reaches back two-thirds of the head; the flagellum is gradually thickened towards the apex. The last joint is twice as long as the two preceding, and all the joints except the 1st and 3rd, are noticeably wider than long, the 1st joint is two-thirds as long again as it is wide, the 3rd joint is about as long as wide, and the 2nd joint is very small and nearly twice as wide as long.

The colour is a rich burnt sienna, with the antennae, legs, and apex of abdomen lighter, or ferruginous yellow. The whole body is dull and microscopically and densely punctulate, intermixed with larger and shallower punctures on the 1st and 2nd abdominal segments and the back of the head. The general puncturation is only observable with a magnification of 60 diameters, and the larger punctures are barely recognizable under a magnification of even 20 diameters.

Other characters as for the genus.

Port Elizabeth. (Brauns.) 1 ♂ in my collection presented by Dr. Brauns.

GENUS SYSPHINCTA, Roger.

(*Sysphingta*), Berlin Ent. Zeitschr., vol. 7, p. 175, 1863.

Characters.

♂ and ♀. The anterior margin of the clypeus is produced into a point (not in *S. Arnoldi*). Flagellum very slightly, if at all,

incrassate towards the apex. Eyes very small, situated in the middle of the sides of the head. Petiole nodiform.

♂. Clypeus produced anteriorly in an obtuse point; frontal carinae separated by a sulcus. Scape longer than one-third of the flagellum. Epinotum truncate. Petiole not so high as in the ♀. 2nd segment of abdomen only feebly incurved. Wings with one cubital and one discoidal cell.

S. ARNOLDI, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 210, ♀, 1913.

♀. 3 mm. Reddish yellow, the margins of the frontal carinae and the epinotal teeth piceous. Covered all over with a very dense yellowish-white semi-erect pubescence longer on the abdomen than elsewhere, very short on the flagellum; a few short pilose hairs on the front of the head, long pale hairs on the ventral surface and sides of the abdomen. Whole body, excluding the legs and flagellum, dull, very minutely, shallowly and irregularly rugose, 2nd abdominal segment and legs slightly shining. Head globose, very little longer than wide, sides moderately convex. Eyes very minute, placed slightly behind the middle of the sides and consisting apparently of only a single facet. Clypeus very short and fused with the frontal carinae; the latter are linear, convergent in front, divergent behind. Mandibles coarsely punctured, with about 4 blunt teeth on the masticatory margin. Scape strongly incrassate towards the apex, reaching back not quite as far as the occipital margin; flagellum 11-jointed, nearly half as long again as the scape, the terminal joints do not form a club, 1st joint a little longer than wide, last joint as long as the three preceding taken together, all the other joints wider than long. Thorax about one-fifth longer than the head, widest in front, but not so wide as the head, narrowing gradually to the epinotum, very convex from side to side and rounded in front. The dorsum of the epinotum is depressed towards the apex which carries a minute blackish tooth on each side; the declivity is short and vertical. The dorsum is faintly, and the declivity distinctly margined laterally by a raised dark line, confluent with the epinotal teeth. Node of petiole not squamiform, but thick and sub-globose, wider than long, convex at the sides and above, vertical in front and behind; ventral lamella very strongly produced, excised below posteriorly so as to form a sharp tooth pointing backwards. Seen from above, the abdomen is oblong, the 1st segment as long as wide and not much, if at all wider at the apical margin than at the base,

2nd segment longer than wide, and one-third longer than the 1st segment. Seen from the side, the 1st segment is much deeper at the apical margin than at the base, the extreme base below is produced into a strong obtuse tooth pointing forwards; the 2nd segment is very convex above and posteriorly and covers the remaining segments, which are incurved and reflected, so that the apex of the abdomen points forwards. Seen from above, the apical segments are completely hidden from view by the 2nd segment.

Bulawayo. 1 taken under a stone, and 1 taken in the nest of *Platythyrea cribrinodis*, Gerst. (G.A., coll.)

As I have adopted the scheme of classification for the genera given by Emery in the "Genera Insectorum," I have retained this species under the genus *Sysphincta*. Dr. Forel in his description refers it to the genus *Proceratium*, and points out that this and other species share some of the characters of both genera, so that he considers it necessary now to sink *Sysphincta* to a sub-genus of *Proceratium*.

SECTION EUPONERINAE, Emery.

TRIBE PONERINI, Forel.

Characters.

♂ and ♀. Mandibles articulated near the anterior angles of the head; frontal carinae convergent posteriorly and nearly always produced into a lateral lobe anteriorly, which covers the insertion of the antennae. A more or less marked constriction between the 1st and 2nd abdominal segments. Claws simple or dentate.

♂. Claws simple or dentate.

Key to the ♂ and ♀.

- (2). 1. Middle pair of tibiae with two simple calcaria; posterior tibiae with two calcaria, the inner large and pectinate *Centromyrmex*, Mayr.
- (1). 2. Tibiae not so formed.
- (14). 3. Middle and posterior tibiae with two well-developed calcaria, the inner the larger, and pectinate.
- (5). 4. Node of the petiole compressed above and forming a sharp edge, with a slight notch behind which is in front of a terminal blunt tooth; clypeus produced into a blunt tooth in the middle of each side; very large species *Streblognathus*, Mayr.
- (4). 5. Petiole not compressed above.
- (7). 6. Clypeus with a median raised portion; the latter is deeply excavated in the middle and projects beyond the anterior margin of the head; 1st

abdominal segment produced ventrally at its junction with the petiole into a blunt, compressed tooth *Paltothyreus*, Mayr.

- (6). 7. Clypeus otherwise formed.
- (9). 8. Eyes situated behind the middle of the head; claws with a minute sharp tooth close to the base. Head narrow, excluding mandibles, at least one and a third times as long as wide across the eyes *Ophthalmopone*, Forel.
- (8). 9. Eyes situated at about the middle or a little in front of the middle of the head.
- (11). 10. Claws with a single blunt tooth a little distance from the base.
Megaponera, Mayr.
- (10). 11. Claws simple.
- (13). 12. Meso-metanotal suture obsolete in the ♀, medium-sized species, 10–14 mm. *Pachycondyla*, Smith.
- (12). 13. Meso-metanotal suture more or less distinct, small species, mostly less than 10 mm. *Euponera*, Forel.
- (3). 14. Middle and posterior tibiae with only one well-developed calcar, which is also pectinate; the other is rudimentary or absent.
- (16). 15. Sculpture fine; at least the abdomen is pubescent, outer calcar absent; small species, less than 10 mm. *Ponera*, Latr.
- (15). 16. Abdomen not pubescent; whole body very shining, evenly and largely punctured; medium-sized or very large species . . *Plectroctena*, Smith.

Key to the ♂ ♂.

- (2). 1. Middle tibiae with two very small calcaria, posterior tibiae with one large pectinate calcar *Centromyrmea*, Mayr.
- (1). 2. Tibiae not so formed.
- (14). 3. Middle and posterior tibiae with two calcaria, the inner pectinate.
- (7). 4. Scape not considerably shorter than the 2nd joint of the flagellum.
- (6). 5. Scape a little longer than the 2nd joint of the flagellum; frontal carinae rudimentary *Megaponera*, Mayr.
- (5). 6. Scape a little shorter than the 2nd joint of the flagellum; frontal carinae distinct *Ophthalmopone*, Forel.
- (4). 7. Scape considerably shorter than the 2nd joint of the flagellum.
- (9). 8. Pygidium prolonged into a curved spine; clypeus truncate or feebly produced *Pachycondyla*, Smith, *Euponera*, Forel (pars).
- (8). 9. Pygidium blunt or pointed, but not produced into a spine.
- (13). 10. Ventral lamella of petiole not furnished with an acute spine pointing backwards.
- (12). 11. First abdominal ventral segment produced at its extreme base into a sharp tooth pointing backwards; large species, 15 mm. at least.
Paltothyreus, Mayr.
- (11). 12. First abdominal ventral segment simple, small species.
Euponera, Forel (pars).
- (10). 13. Ventral lamella of petiole produced posteriorly into an acute spine pointing backwards *Streblognathus*, Mayr.
- (3). 14. Middle and posterior tibiae with a single calcar.
- (16). 15. Pygidium pointed or produced into a spine; scutellum depressed or moderately convex; integument finely punctured, small species.
Ponera, Latreille.
- (15). 16. Pygidium obtuse; scutellum prominent; integument coarsely punctured, large species. *Plectroctena*, Smith.

GENUS CENTROMYRMEX, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 16, p. 894, 1866.

Spalacomymex, Emery, Ann. Mus. Stor. Genova, vol. 27, p. 489, 1889.*Characters.*

♀. Clypeus projecting far backwards between the frontal carinae; the latter expanded in front, not close together, and with a long sulcus between them.

The scape of the antennae is rather flattened, the flagellum incrassate towards the apex. Eyes absent.

Mandibles long, the masticatory margin unusually so, with fine denticulations or without teeth.

Pro-mesonotal suture distinct, meso-epinotal suture obsolete.

Pronotum sharply marginate in front, the part below the margin almost vertical. The dorsum of the epinotum is contracted at its base so as to form a median saddle-shaped ridge, and is raised into a hump towards the apex above the declivity.

Node of petiole somewhat conical, with a fine sharp spine beneath. Abdomen ovate.

Legs very short and stout, the femora and tibiae broad and flat. Posterior tibiae with two calcaria, the inner pectinate, the outer simple; middle tibiae with two simple calcaria.

♀. Similar to the ♀ but winged, slightly larger, with medium-sized eyes placed nearly in the middle of the sides of the head; small ocelli present, situated close to the occiput.

♂. Head rounded, the clypeus very convex. Mandibles short, triangular and edentate. Thorax rather short, the mesonotum with Mayrian furrows. Epinotum very convex. Node of petiole emarginate above. Abdominal constriction feeble. Pygidium not pointed. Wings short, not reaching the end of the abdomen. Calcaria of middle tibiae simple and small; posterior tibiae with two calcaria, the inner pectinate.

† C. CONSTANCIAE, n. sp. (Plate II., figs. 14, 14a, 14b, 14c.)

♀. 5-5.3 mm. Dark reddish yellow, posterior half of head, anterior portion of pronotum, mesonotum, and epinotum above, the basal half of the abdominal segments, apices of the joints of the flagellum, except the apical, and the anterior tarsi, castaneous.

There is no pubescence, and the whole body is very smooth and shining. Sides and posterior part of the head with very distinct small punctures; scape and frontal carinae and the central portion

of the clypeus with a few small punctures; mandibles very finely and sparsely punctured; depressed area below the antennal sockets very finely striate. Pronotum above rugulose; mesonotum with about 15 large punctures on each side, the central longitudinal area impunctate. The pleurae, femora, tibiae, and abdominal segments very sparsely and finely punctured.

The pilosity consists of yellow hairs arising from the punctures, rather short on the thorax and vertex of head, longer on the abdomen and node of petiole. There is a long hair on each side of the middle of the clypeus.

Head seen from the side, nearly flat above, truncate behind and in front. Seen from above, the head is wider behind than in front, the posterior angles very rounded.

Mandibles very convex longitudinally, more than two-thirds the length of the head, and with the masticatory margin almost smooth. Clypeus transversely impressed behind the straight anterior margin, raised in the middle (the raised portion forming a vertical and sub-quadrate area, shining and punctured), produced backwards between the frontal carinae as far as the beginning of the frontal sulcus, which is long and deep and ends abruptly in the middle of the vertex. The frontal carinae much widened anteriorly but not lobed.

Scape about as long as the mandibles, considerably flattened dorso-ventrally; flagellum 11-jointed, not quite so long as the head and mandibles together, 1st joint nearly as long as the 2nd, 3rd and 4th together, 2nd joint very short, 2nd to 8th joints wider than long, apical joint as long as the two preceding together. Eyes and ocelli absent.

Pronotum with a raised margin anteriorly, the region between the latter and the neck, vertical. Seen from above, the pronotum has a crescentic outline, obtusely pointed in the middle in front. Mesonotum twice as long as the pronotum, with a raised margin in front, and at the sides anteriorly. The dorsum of the epinotum is depressed and saddle-shaped anteriorly and raised into a hump posteriorly, but the declivity also enters partly into the formation of the latter. The petiole is elongate, with a minute lateral tooth on each side of the extreme base; the node is slightly excavated and sub-vertical in front, very convex above and at the sides, vertical behind. The ventral lamella is produced at its anterior third into a short, sharp spine, pointing forwards. The node does not rise higher than the epinotum.

Abdomen ovate, the 1st segment sub-truncate in front, and one a half times as long as the 2nd; the constriction between these two

segments is feebly indicated dorsally. Sting very long, three-quarters the length of the abdomen.

Coxae, especially of the 1st pair of legs, very large. Anterior femora and tibiae flattened and wide. The intermediate tibiae short, only half as long as the femora; the posterior tibiae also short, but a little longer than the intermediate. The 2nd, 3rd, and 4th joints of all the tarsi wider than long; the apical angles of all the tarsal joints produced into stout, blunt spines; the posterior metatarsi with three or four stout spines, the intermediate tibiae with two rows of spines on their external margins.

♀. 7 mm. Similar to the ♂ but much darker, the 1st abdominal segment dark reddish brown, the apical margin lighter; the 2nd-4th segments piceous, the 5th ferruginous in the middle, piceous at the sides. The margin of the pronotum is much more prominent than in the ♂, the mesonotum is flatter, raised more above the pronotum and is vertically truncate in front. The scutellum is distinct, black, shining, and impunctate, and separated from the mesonotum by a shallow sulcus. The metanotum is very short; epinotum not forming a hump as in the ♂, the dorsum short, the declivity steep, rounded above and at the sides.

Eyes and ocelli present; the former moderately large, their distance from the base of the mandibles being about two-thirds of their own length; the ocelli are set far back, close to the occipital margin. The legs are proportionately more slender than in the ♂. Winged (de-alated in the single specimen in my possession).

Bulawayo, Bembesi, under large stones. The genus is termitophilous, but this species does not appear to be so, since it was not found in or near the nests of termites. The species cannot be mistaken for any other Ponerine ant of our region, on account of the striking fossorial structure of the legs, and the marginate pronotum. This species is apparently closely related to *C. sellaris*, Mayr, from the Cameroons, although not having had an example of the latter for inspection, it is not easy to compare the two species, since Mayr's description of *sellaris* is based mainly on a comparison between it and *C. Feae*, Emery, an Indian species. Judging, however, by the descriptions of these two species, *Constanciae* has the following characters to distinguish it from *sellaris*. The colour is much darker; the striae below the antennal sockets do not extend back to the posterior angles of the head, hardly passing beyond the middle line of the head; the limits of the declivity above (seen from behind) are distinctly marked off from the humped shaped portion of the dorsum of the epinotum. The declivity is also distinctly

convex from above to below, and from side to side, not flat in the middle and below as in *sellaris*. (S.A.M., R.M., G.A., coll.)

GENUS STREBLOGNATHUS, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 716, 1862.

The genus includes only a single species.

S. AETHIOPICUS, Smith. (Plate I., fig. 5.)

Cat. Hymen. Brit. Museum, vol. 6, p. 91, ♀, 1858. Emery, Ann. Soc. Ent. Belg., vol. 43, p. 468, ♂, 1899.

♀. 18–22 mm. Black, mandibles piceous, anterior tarsi beneath with dense golden hairs. Head and thorax dull, petiole and abdomen shining. A very short pale pubescence on the whole body, dense on the head and thorax, exceedingly scanty elsewhere. The pilosity consists of short thick hairs, dense on the head, scape and legs, scanty on the rest of the body. The head is very finely reticulate-punctate, the thorax finely striate, the abdomen smooth and shining, with a few fine punctures; 3rd–5th segments a little more strongly and closely punctured, and with longer hairs.

Head, excluding mandibles, almost rectangular, with the posterior angles rounded; considerably wider than the thorax.

Clypeus somewhat projecting, and sharply truncate inwardly in front, so that a deep depression lies between it and the labrum; it is raised roof-shaped in the middle, the declivity on each side ending at about half the distance from the external angles; on each side anteriorly it is produced into a blunt tooth which lies about half-way between its centre and the base of the mandible. Frontal area elongate and sharply defined, produced backwards almost two-thirds the length of the frontal carinae. The latter are short, dilated in front, and project over the insertion of the antennae. Mandibles two-thirds the length of the head, oblongo-triangular, coarsely punctured on the masticatory margin, which is oblique and longer than the basal. Antennae long, the scape reaching back to the middle of the mesonotum, scape and flagellum together reaching a little beyond the middle of the 1st abdominal segment; flagellum filiform, the 1st joint two-thirds the length of the 2nd. Eyes more dorsal than lateral, moderately large and situated in about the middle of the length of the head.

Pro-mesonotal suture distinct, the meso-metanotal suture less so. Mesonotum raised higher than the pronotum; the metanotum and

epinotum narrow and compressed. The dorsum of the epinotum flat, with slightly raised lateral margins which end just before the apex in two short teeth which are continuous with the sharply raised lateral margins of the declivity (see Fig. 3, p. 4). Petiole convex anteriorly, sharply truncate and slightly concave posteriorly, compressed laterally so as to form an acute dorsal ridge which ends posteriorly in a curved point, with a small notch at its base. The posterior apex of the petiole lies considerably higher than the thorax. Ventral lamella produced along nearly its whole length into a blade-like expansion which is truncate in front and semicircularly emarginate behind.

Abdomen pear-shaped; 1st segment nearly as long as the 2nd, the latter as long as the remaining segments together. The apical segment is microscopically rugulose and with a sparse but coarse piligerous puncturation.

The legs are long, the posterior metatarsi as long as the tibiae.

♀. Unknown.

♂. 18 mm. Testaceous, scutellum and last two abdominal segments darker. Head, between the eyes and ocelli and posteriorly, black and shining. Wings pale fuscous, nervures and stigma piceous. Head strongly transverse. Eyes and ocelli very large, the former occupying almost the whole of the sides of the head.

Clypeus trapezoid, arcuately emarginate in front, and separated from the frontal area behind by a suture. The frontal area is large and projects back in an acute angle between the antennal sockets. Frontal carinae rudimentary. Antennae filiform and very long, reaching back to the apex of the 4th abdominal segment; the scape very short, about as long as the long diameter of the ocellus.

The mesonotum is dull and finely punctured, rounded, and with a shallow furrow on each side which extends from the posterior margin to a point beyond the anterior edge of the tegulae. A feeble ridge in the centre extends from the pro-mesonotal suture to about the middle of the mesonotum. Scutellum raised above the level of the rest of the notum; it is sloping in front and behind, somewhat compressed laterally and separated from the mesonotum by a deep and clathrate suture.

Epinotum with a faint median sulcus at its extreme base; the declivity is not steep, but forms a continuous curve with the dorsum and its lateral margins are defined by rather feeble ridges which converge towards the base and almost meet below the median sulcus. The declivity smooth and shining below, the rest of the

epinotum duller and feebly punctured. Node of the petiole longer than wide, convex in front, truncate behind and obtusely pointed above. The ventral lamella in the middle is produced into a sharp spine, pointing backwards.

Abdomen smooth and shining, apical dorsal segment slightly carinate and ending in a short, sub-acute point.

The whole body covered with a fine, pale pubescence. Pilosity absent except on the ventral surface of the abdomen, which is clothed with long pale hairs. Willowmore. (Brauns.) (S.A.M., R.M., G.A., coll.)

GENUS *PALTOTHYREUS*, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 735, 1862.

Formica (pars), Fabricius.

Pachycondyla (pars), Smith. Cat. Hymen. Brit. Mus., vol. 6, p. 105, 1858.

Characters.

♂. Clypeus with the central portion raised, roundly truncate in front and projecting beyond the rest of the clypeus. This raised portion is deeply excavated in the middle, shining, and with two or three longitudinal striae; the sides of the raised part are also striate. Frontal carinae triangularly dilated in front, slightly divergent behind; the frontal area, fused with the clypeus, reaches backwards as far as the ends of the frontal carinae, beyond which lies a short, shining depression.

Mandibles elongate and triangular; the masticatory margin is long and furnished with numerous small teeth. Flagellum of antennae filiform; scape arcuate and somewhat flattened at the apex, longer by one-third than the head (excluding the mandibles). Eyes moderately large and situated in front of the middle of the sides of the head. Pro-mesonotal suture distinct, meso-epinotal suppressed dorsally. Thorax widest in front, gradually thinning towards the base. Node of petiole high and rounded; ventral lamella produced into a broad, triangular tooth. First abdominal segment, at its junction below with the petiole, produced into a blunt tooth; the segment is vertical in front, and the basal margin above has distinct but obtuse lateral angles. Abdominal constriction feeble. Claws with a small tooth between the base and the middle.

♀. Winged, larger than the ♂; thorax depressed, with the pronotum largely visible.

♂. Clypeus triangular, with a small conical protuberance on the anterior margin. Frontal carinae very short and feebly developed. Ocelli small. Head not wider than the pronotum at its widest. Antennae filiform and long, reaching back to the apical margin of the 2nd abdominal segment; scape a little longer than the distance between the two posterior ocelli. Pronotum moderately long and plainly visible from above. Mesonotum with a central depression extending from the base to a little beyond the middle, and with traces of lateral grooves. Node of the petiole similar to that of the ♀, but not so high and with the lamellar tooth less acute. The basal, ventral tooth of the 1st abdominal segment is larger than in the ♀. Abdominal constriction feeble. Pygidium pointed, but not spined.

P. TARSATUS, Fabr. (Plate I., figs. 6, 10.)

Suppl. Ent. Syst., p. 280, 1798. (*Formica tarsata*.) Mayr, Verh. Zool. Bot. Ges. Wien, vol. 16, p. 894, ♂, 1866. Forel, Grandidier Hist. Madag., vol. 20, p. 136, ♀, 1891. Smith, Cat. Hymen. Brit. Mus., vol. 6, p. 92, ♂, 1858. (*Ponera spiniventris*.) Ibid., p. 105, ♀. (*Pachycondyla similima*.)

♀. 17–20 mm. Black, masticatory margins of mandibles, lobes of frontal carinae and tarsi reddish black. Head, thorax, legs and antennae with a fine, inconspicuous yellow pubescence, and sparsely and irregularly beset with longer yellow hairs. Pilosity and pubescence of abdomen scantier, apical segment with yellowish-red bristles. Mandibles with a row of large punctures along the masticatory margin, elsewhere with a few shallow punctures.

Head evenly and finely striate, the striae running diagonally from the centre outwards. Pronotum with larger striae running arcuately from front to base. Meso- and epinotum transversely and rather obliquely striate, the striae finer than on the pronotum. Mesopleurae finely punctate. Dorsum of epinotum long, the declivity short and gradual. Node of petiole above with a few almost obsolete striae. Abdomen shining, 1st and 2nd segments with a few irregular punctures on the dorsum near the base, their apices more closely punctured. Third and 4th segments evenly and fairly closely punctured; apical segment microscopically rugulose at the base, shining and impunctate at the apex. Anterior tarsi densely clothed beneath with golden, bristly hairs.

♀ 23 mm., including the mandibles; similar to the ♂ except for the usual sexual differences. Pronotum more than twice as wide as long; mesonotum wider than long, one-quarter longer than the

pronotum. Node of petiole a little wider and thicker above than in the ♀. Wings brownish yellow, nervures and stigma brown. Alar expanse 29 mm.

♂. 14 mm. Black; wings fuscous, nervures brown, stigma piceous. Head and thorax with a close yellow pubescence, especially on the epinotum and posterior face of the node, and a fairly abundant pilosity of yellowish hairs. Abdomen with a pale inconspicuous pubescence, less abundant on the 3rd and following segments; ventral segments with long, pale hairs.

Head and thorax moderately shining, irregularly and shallowly punctured; the base of the mesonotum punctate-striate; the scutellum finely punctured. Abdomen very shining and with a bluish reflection, all the segments very finely and sparsely punctured. The 1st segment has on each side of the apical margin a transversely elongate, and almost obsolete, angle or hump. Pygidium very smooth and shining, with a few fine punctures. Other characters as for the genus.

This species is widely but locally distributed. Generally the ♀♀ go about singly, but occasionally forage in short columns, in single file. The food is varied, but consists largely of termites. The nests have several entrances, which are sometimes surrounded by large heaps of finely divided earth. The species has a most powerful and offensive smell, which appears to me to resemble that of the juice in a foul tobacco pipe.

Bulawayo, Victoria Falls, Bembesi and Matoppos, Rhodesia; Willowmore. (Brauns.) Zululand. (Marley.) (S.A.M., R.M., G.A. coll.)

Var. *DELAGOENSIS*, Emery.

Ann. Soc. Ent. Belg., vol. 43, p. 468, ♀, 1899.

This differs from the type in having the median longitudinal raised line of the clypeus extending further back, and in the less distinctly striated mandibles.

Delagoa Bay. (S.A.M. coll.)

These characters are variable in Rhodesian specimens, in which as a rule the mandibles are only very faintly striate, and it appears to me doubtful whether the above form is worthy of even varietal distinction. If it is, the Rhodesian examples ought perhaps to be referred to it. In a specimen from West Africa in my possession the mandibles are almost smooth, and the clypeus projects back only a short distance between the frontal carinae, but the striation of the head is much stronger than in the Rhodesian examples.

GENUS MEGAPONERA, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 734, 1862. Emery, *Megaloponera*, Ann. Mus. Stor. Nat. Genoa, vol. 9, p. 368, 1877.

Ponera (pars), Guérin, Gerstaecker, Roger.

Formica, Fabricius, Latreille.

Characters.

♂. Clypeus rounded anteriorly, with the anterior border and middle portion raised, the latter convexly so, and produced backwards angularly between the frontal carinae. The latter are slightly lobed in front, convergent in their middle portion and diverge before ending at about the level of the eyes. Mandibles triangular, the masticatory margin beset with alternating large and small teeth. Eyes a little in front of the middle of the sides of the head. Pronotum long, twice as long as the mesonotum; the latter margined all round by a tolerably distinct suture. Node of petiole large, trapezoid in horizontal cross-section; the ventral lamella is produced into a blunt tooth, pointing backwards. Abdominal constriction obsolete. Claws with a short tooth near the base.

♀. (See footnote, p. 48.)

♂. Clypeus gibbous, anterior margin rounded, posterior margin not projecting between the frontal carinae, which are short and indistinct. Mandibles very short and edentate. The antennal sockets are further apart from each other than they are from the sides of the head. Antennae moderately long, scape long, being longer than the longest joint (2nd) of the flagellum; the latter filiform. Eyes slightly sinuate on their inner margins, and occupying less than half the sides of the head. The posterior dorsal margin of the head is produced into a rim or collar. Mesonotum prominent and twice as long as the pronotum. Abdominal constriction feeble. Pygidium not spined. Claws with 3 or 4 minute teeth near the base.

M. FOETENS, Fabr. (Plate I., figs. 7, 8, 8a, and text-fig. 6.)

(*Formica*), Ent. Syst., vol. 2, p. 354, ♀, 1793.

(*Megaloponera*), Mayr, Sjöstedt. Zool. Exp. Kilimandjaro, Formicidae, p. 9, ♂, 1907.

(*Ponera crassicornis*), Gerstaecker, Sitzungsab. Akad. Wiss. Berlin, p. 262, ♂ mi., 1858.

♂ major. 15 mm. Black, covered with a fine, yellow pruinose

pubescence, and with golden-red hairs on the inner margin of the mandibles, the clypeus and apical abdominal segment. The latter is ferruginous at the apex. The apex of last joint of flagellum, the spines of the tarsi, and the calcaria also ferruginous. The apices of the dorsal segments of the abdomen dark ferruginous.

Mandibles very strongly curved, the convexity being dorsal, two-thirds as long as the head from clypeus to occiput, and shallowly and sparsely punctured. A carina extends on the cheek from the anterior margin of the eye to the clypeus.

Head, pro- and mesonotum and abdomen moderately shining, and the whole body impunctate. The pronotum has a longitudinal central impressed line anteriorly. The dorsum of the epinotum is flat, with a faint longitudinal impression centrally, and widens towards the brow of the declivity, which bears on each side a blunt prominence (hardly a tooth); the declivity is somewhat excavated and vertical. Mesapleurae, epinotum, and node of petiole duller than the rest of the body.

Antennae reach back as far as the base of the 1st abdominal segment; scape as long as the head from the clypeus to the occiput, thickened and flattened towards the apex; 2nd joint of the flagellum longest, but not quite twice as long as the first.

♂ minor, 9–11 mm. = *M. crassicornis*, Gerst.

It differs from the ♀ major in being considerably smaller and less pubescent. The abdomen, the vertex of the head, the pro- and mesonotum are much more shining than in the larger form. It also differs by the thicker and shorter scape, which is widest in the middle, and by the node of the petiole, which is less acute dorsally.

Nevertheless small examples are met with which are just as pubescent and dull as the larger sort.

♂. 12 mm. Black, the apical margins of all the abdominal segments widely ferruginous. The dorsum of the epinotum is short, not longer than the pronotum, and only slightly indented at the apex centrally. Wings short and narrow, fuscous, with the apical half darker, the nervures light brown, the stigma, costa, and whole of the marginal cell dark brown. Third, 4th, and 5th ventral segments of the abdomen with dense golden fimbriae. For the rest the characters of the genus.

Formerly the small workers were separated as a distinct species, *crassicornis* Gerst., but the two forms are found together in the same nest, and the distinction cannot therefore be maintained. It is a common ant in Rhodesia, and lives almost exclusively on termites,

which are carried off by means of carefully arranged raids in which the ants march in double file. This is the species which is popularly called the "Matabele" ant, and like its cousin *Paltothyreus*, it is also endowed with a very offensive odour. They stridulate very loudly when disturbed, and their sting is exceedingly painful. The entrance to the nest consists of one or more simple holes, without any mounds of earth around them.* (S.A.M., R.M., G.A., coll.)

* Since the above descriptions were written, I have had the good fortune to witness the singular spectacle of a migration of this species, and to obtain thereby a specimen of the real queen of this ant. As I intend to give a fuller account elsewhere of the manner in which the migration was carried out, it will suffice here to remark that the old and new nests were situated about 60 feet apart, and that the journey was accomplished by the colony in stages, in the following manner. At about 15 feet from the old nest the first camp was formed and a halt made, until all the eggs, larvae, and pupae were collected together, and until most of the stragglers had come in. Similar halting-places or temporary camps were formed every 15 feet or so. I saw the queen in the first camp, but failed to seize her with my forceps; the same thing occurred when she was seen once again in the second camp, and it was only in the third camp that I managed to capture her, not an easy task when the viciousness of the ♀ ♂ is taken into account.

In the Introduction to this work (p. 6) I pointed out that if Emery's suggestion be correct that the larger worker-like form is the ergatoid ♀, the species would be peculiar in having normally more queens than workers in the nest. The discovery of the true, although ergatoid, queen, disposes of this anomaly, and at the same time indicates the remarkable fact that the workers of this Ponerine ant are dimorphic. I append herewith a description of the queen, from which it will be seen that although similar in general appearance to the ♀ major, it differs from it radically in important particulars, notably in the shape of the epinotum and petiole.

♀. 18.5 mm.; length of abdomen, 9 mm. (in the ♀ major, 4.5-5 mm.); width of abdomen, 4 mm. (in the ♀ major, 2.3 mm.). The pubescence is a little more abundant and longer than in the ♀ major, but the pilosity of the body is much more abundant, especially on the sides of the pronotum, the mandibles and the margins of the abdominal segments. The fine sculpturation is similar to that of the ♀ major, but the mandibles are more coarsely punctured, and the head, thorax, petiole, and abdomen have some scattered, shallow, and fairly large punctures, from which arise the pilose hairs, almost entirely wanting in the ♀ major.

The head, pro- and mesonotum as in the ♀ major, but the meso-epinotal suture is much deeper and wider. The dorsum of the epinotum is not longer than the pronotum (much longer in the ♀ major). Seen from the side, it is not horizontal as in that caste, but convex longitudinally from the base to the apex, and convex from side to side, not sub-margined as in the ♀ ♂. A longitudinal and very distinct median groove runs from the base almost to the brow of the declivity; this groove is but faintly indicated in the ♀ major. The declivity is similar to that of the ♀ major, but not so steep, and the lateral tubercles above are flatter or less dentiform. The node of the petiole is not sub-cubic as in the ♀ ♂, but almost squamiform and slanting forwardly, so that the anterior and posterior faces are not vertical or almost so, as in the ♀ ♂, but obliquely sloping. The anterior face is strongly concave, and the posterior face is only a little less so. Seen from the side,

GENUS OPTHALMOPONE, Forel.

Ann. Soc. Ent. Belg. Vol. 34, C.R. p. 113, 1890.

Pachycondyla (pars), Emery, Bull. Soc. Ent. Ital., vol. 18, p. 360, 1886.

Characters.

♂. Clypeus rounded in front, moderately convex, produced backwards angularly between the frontal carinae; the latter are short, close together and narrow, sometimes lobed anteriorly. Mandibles triangular, long, and beset with alternating long and short teeth. Eyes large, placed behind or in the middle of the sides of the head. Pronotum much longer than the mesonotum; the latter is circumscribed by a distinct sulcus. Node of petiole thick, truncate behind, and with the ventral lamella produced into a more or less sharp point. Constriction between the 1st and 2nd abdominal segments very slight. Claws simple.

♀. Unknown.

♂. Head longer than the pronotum; clypeus gibbous and projecting beyond the base of the mandibles; frontal carinae distinct, divergent behind. Mandibles moderately long and pointed. Antennae about as long as the head and thorax together; scape shorter than the 2nd joint of the flagellum. Pronotum largely exposed, at

the node is four and a half times higher than long (about two and a half times in the ♀ major). Seen from above, the node is three and a quarter times as wide as long (about as wide as long in the ♀ major); the node above is longer, *i.e.* thicker in the middle than at the sides; it is also convex from side to side, but more acute dorsally than in the ♀ ♀. The anterior face of the 1st abdominal segment is not perpendicular as in the ♀ ♀, but slopes forwards. The abdomen is much larger than in the ♀ major, and all the segments are much wider than long. The teeth of the mandibles are larger and more acute. Other characters as in the ♀ major.

Bulawayo.

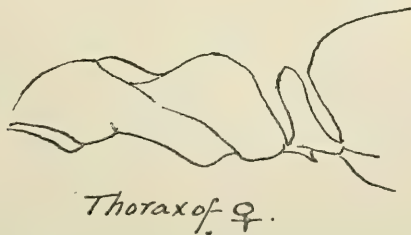


FIG. 6.

MEGAPONERA FOETENS, Fabr.

its widest only slightly, if at all, wider than the head across the eyes. Node of petiole thick, lamellar projection beneath arcuately emarginate, with a posterior tooth pointing backwards.

There are two South African species, distinguished as follows :

- (2). 1. ♀. Head, excluding mandibles, only slightly longer than wide across the eyes.
 ♂. Frontal area very shining and indistinctly defined; mandibles narrow and obliquely truncate at the apex; 6th ventral segment furnished on each side with a flat and spatulate appendage .. *hottentota*, Emery.
- (1). 2. ♀. Head, excluding mandibles, one and two-thirds as long as wide across the eyes.
 ♂. Frontal area dull and distinctly defined; mandibles broad and acute at the apex; 6th ventral segment simple *Berthoudi*, Forel.

O. BERTHOUDI, Forel. (Plate II., figs. 11, 13.)

Ann. Soc. Ent. Belg., vol. 34, C.R. p. 112, ♀, 1890. Mitt. Schweiz. Ent. Ges., vol. 6, p. 76, ♂, 1894.

♀. 12 mm. Black, masticatory margin of mandibles, extreme base of scape and 2nd-5th joints of all the tarsi dark red, calcaria reddish yellow. The whole body microscopically rugulose and covered with a very close and fine dull golden pubescence; the inner margin of the mandibles, the clypeus and last two segments of abdomen with a few golden bristles, more abundant on the last segment. Clypeus broadly angular in the middle and with three small grooves on each side of the middle area behind the anterior margin, the innermost the longest. Head very long, parallel-sided and rounded behind. The mandibles strongly convex longitudinally; seen from the side, as long as from the apex of the cheek to the posterior margin of the eyes. The latter are large and situated behind the middle of the sides of the head.

The clypeus produced posteriorly between the frontal carinae, beyond which is a narrow, shining depression. The frontal carinae, divergent in front and behind, only just reach a point level with the anterior margin of the eyes. Antennae reach backwards as far as the base of the 1st abdominal segment; scape slightly thickened towards the apex, and as long as the head, excluding the mandibles.

Pronotum two and a third times as long as the mesonotum. Epinotum laterally compressed, with a shallow but distinct longitudinal groove in the middle, stretching from the base of the dorsum to the brow of the declivity. The latter is very steep, and seen from

behind is angular at the sides and bluntly so above, the lower and central portion of its face slightly gibbous. Node of petiole not so high as the 1st abdominal segment, rounded in front, truncate in front and behind, and with a well-defined posterior dorsal margin which is bisinuate in the middle and feebly angled at the corners. The ventral lamella ends in a sharp tooth pointing backwards, and does not extend beyond the middle of the petiole. Abdomen somewhat conical and widest at the base. 1st and 2nd segments sub-equal in length, constriction obsolete. Legs long and thin.

♂. 11 mm. Black, 3rd and following joints of flagellum ferruginous yellow, lighter towards the apex; 1st joint of flagellum, base and apex of scape, the last joint, and apices of all the joints of the tarsi, dark rusty red. Wings fuscous, darker towards the apex, nervures pale brown, stigma piceous. The whole body microscopically rugulose and covered with a greyish pruinose pubescence similar to that of the *Platythyreini*. Base of head, the thorax and abdomen with large but shallow, piligerous punctures, sparse on the head and thorax, closer on the petiole and abdomen. The hairs are longer on the prothorax, epinotum, node of petiole and abdomen, shorter elsewhere, and of a fulvous colour.

Head narrowest at the base, the portion which extends from the base to a line joining the anterior margin of the eyes having the shape of an inverted triangle. Mandibles broad and acute at the apex; clypeus large, slightly acuminate in the middle in front, rounded at the sides and gibbous at the base. Antennae filiform, 1st joint of flagellum very short, the rest diminishing in length towards the apex. Frontal carinae broad and reaching to a point beyond the middle of the eyes. The latter are very large and placed in front of the middle of the sides of the head; ocelli not very large. Posterior margin of the head reflexed above and at the sides, forming a slight collar similar to that of the ♂ of *M. foetens*. Pronotum widely exposed, two-thirds as long as the mesonotum. Promesonotal suture distinct; mesonotum separated from the scutellum by a deep and wide sulcus; there is also a narrow lateral groove on each side reaching to a level beyond the anterior margin of the tegulae. The scutellum is sub-conic and finely striated at the sides. The base of the epinotum and the brow of the declivity rugose; the declivity is oblique. The tooth of the ventral lamella of the petiole is thinner and more acute than in the ♀. Pygidium narrow, shining, and ending in a short spine. Abdomen of a similar shape to that of the ♀, the hairs on the 3rd and following segments very long

and bright fulvous. 3rd to 5th ventral segments with long golden hairs on their apical margins.

This species is an exceedingly fast ant which occasionally may be seen foraging in very irregular columns. It is common in the neighbourhood of Bulawayo, and nests under stones or in deserted termite mounds.

(S.A.M., R.M., G.A. colls.)

O. HOTTENTOTA, Emery. (Plate II., fig. 12.)

Bull. Soc. Ent. Ital., vol. 18, p. 360, ♀, 1886.

♀. 10-11 mm. Black; very similar to *Berthoudi*, but differs in the following features. The pubescence is denser and of a more fulvous tint. The head is shorter and not so parallel-sided, the eyes are placed farther forwards and the mandibles are broader and not so long. The epinotum is less compressed laterally and broader on top, and not so long or so flat; it is compressed near the base and then rises in a slight hump and is continued in a gradual curve to the brow of the declivity. The latter, seen from above, has a much less angular outline than in *Berthoudi*. Seen from above, the node of the petiole is much narrower in front than in *Berthoudi*, and is only slightly emarginate in the middle posteriorly, and also not bisinuate nor obtusely angled laterally. The tooth of the ventral lamella is shorter and more acute.

♂. 11-12 mm. Black. Mandibles obtuse and obliquely truncate at the apex; posterior margin of the head not reflexed so as to form a collar. Frontal area shining and indistinctly defined. The head is more transverse than in *Berthoudi*, since the base of the head is much wider than in that species. Antennae, mandibles, tarsi and apical third of all the femora, ferruginous.

It is easily distinguished from *Berthoudi* by the following characters. Head, thorax and base of abdominal segments with golden, not pruinose, pubescence. Piligerous punctures entirely absent, the whole body shining, especially the abdomen and node of petiole. The latter is more sharply truncate posteriorly and feebly sinuate in the middle. The ventral segments are more densely fimbriated and the 6th ventral segment is produced on each side into a long, flat and spatulate appendage, densely fimbriated at the apex. Wings wider and longer than in *Berthoudi*.

Willowmore. (Brauns.) Cape Province generally, and Sebakwe, Mashonaland. I have not met with it in Matabeleland.

(S.A.M., R.M., G.A. colls.)

GENUS PACHYCONDYLA, Smith.

Pachycondyla (pars), Cat. Hymen. Brit. Mus., vol. 6, p. 105, 1858.

Characters.

♂ and ♀. Clypeus rounded in front, or obtusely pointed, prolonged backwards angularly between the frontal carinae. Mandibles sub-triangular, dentate. Eyes situated in the anterior third of the sides of the head. Cheeks not carinated. Pro-mesonotal suture distinct; meso-epinotal suture obsolete above. Petiole generally with a thick, squarish node. Abdominal constriction usually distinct. Claws simple.

♂. Head more or less transverse. Clypeus rounded and gibbous in the middle, or broadly carinate. Ocelli large; eyes very large, occupying nearly the whole of the sides of the head. Frontal carinae very feebly developed or obsolete. Antennae long, scape shorter than the 2nd joint of the flagellum. Pronotum largely exposed dorsally. Mesonotum usually with two lateral grooves and Mayrian furrows. Node of petiole compressed laterally and smaller than in the ♀. Ventral lamella with a small tooth. Abdominal constriction distinct. Pygidium prolonged into a sharp spine. Claws simple. Wings very broad, the greatest width being only a little less than half the length.

The genus comprises three sub-genera, viz. *Pachycondyla*, *Ectomomyrmex* and *Bothroponera*. Of these the first is confined to America, and the 2nd is mainly Asiatic. The following characters distinguish *Bothroponera* and *Ectomomyrmex*.

1. Dorsal surface of the head marked off from the cheeks and the posterior occipital region by a tumid angular margin; the mesothoracic episternum divided from the sternum in the ♀ by a strong suture *Ectomomyrmex*, Mayr.
2. Dorsal surface of the head not marked off from the rest by a margin; mesothoracic episternum fused with the sternum, in the ♀. *Bothroponera*, Mayr.

SUB-GENUS ECTOMOMYRMEX, Mayr.

Tidjschr. v. Entom. vol. 10, p. 830, 1867.

P. (ECTOMOMYRMEX) BRUNOI, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 205, ♀, 1913.

♀. 4-4.6 mm. Black, apical segments of abdomen lighter. Legs, frontal carinae and antennae dark yellowish red, the apical halves of the 2nd-10th joints of the flagellum darker, coxae and trochanters

brown, mandibles ferruginous. Legs, antennae, and body covered with a pale yellowish and rather long pubescence; mandibles, clypeus, and apical margins of abdominal segments with long pale, semi-erect hairs. Head dull, very finely and closely punctured. Thorax slightly shining, evenly but less closely punctured than the head. Abdomen shining, 1st segment finely and distinctly, 2nd segment faintly punctured.

Head, excluding the mandibles, a little longer than wide, sides convex, occipital margin straight, posterior angles rounded but distinct. The angulation of the surface of the head, between the dorsal and genal regions, characteristic of the genus, is so feeble in this species as to be hardly noticeable.

Clypeus shining and very short, anterior margin moderately convex, raised in the middle to form a shining carina which is fused with the frontal carinae. Mandibles triangular, shining, sparsely punctured, furnished with about 7-8 teeth. Scape reaching back as far as the occipital margin, flattened and incrassate towards the apex; flagellum strongly incrassate towards the apex, the last 4 joints forming a club; 1st joint longer than wide, 2nd-10th joints wider than long. Eyes consisting of about 6 ill-defined facets, very small and flat, situated in the anterior fifth of the sides of the head. Frontal carinae wide, their external margins very convex. Pronotum not quite so wide as the head, wider than long, rather flat above and at the sides, rounded in front and with the anterior angles rounded but fairly distinct. Pro-mesonotal suture strong, meso-epinotal suture feeble. Mesonotum ovoid, wider than long, hardly two-thirds as long as the pronotum. Dorsum of epinotum very narrow, widening towards the apex; declivity rather abrupt and nearly vertical, smooth and shining. The upper surface of the node, seen from above, is in the shape of a wide-based triangle, the apex very rounded; seen from the side, the node is convex above from side to side, the anterior face slopes backwards and is concave from below to above, the posterior face vertical and concave from side to side. Ventral lamella of petiole produced and widely truncate at the apex. Abdomen elliptical, 1st segment with the anterior face sloping forwards, wider at the apex than at the base, as wide as long; 2nd segment a little longer than the 1st, the constriction between the two segments moderate. Anterior femora and tibiae stout.

♂ (hitherto undescribed). 4.2 mm. Black, scape and 1st joint of flagellum, trochanters, apices of femora and tibiae, extreme bases of tibiae and all the tarsi pale brownish yellow. Head and thorax very shallowly punctured, abdomen impunctate. Whole body

shining, clothed with a long adpressed pale pubescence, closer on the head and legs, very dense on the antennae and scantier on the thorax and abdomen; abdomen sparsely pilose with semi-erect long pale hairs, the rest of the body with a very scanty blackish pilosity. Head wider than long, excluding the clypeus nearly twice as wide as long. Clypeus raised roof-shaped towards the middle line, anterior margin straight and depressed; seen directly from above, the clypeus projects considerably in front of the line of the mouth. Frontal carinae flat and nearly obsolete. Mandibles atrophied to two triangular flaps at the sides of the mouth. Eyes large, not very prominent, their internal margins moderately concave. Ocelli large, on a slightly raised area. Antennae long and filiform, reaching back as far as the base of the 2nd abdominal segment; scape shorter than the distance separating the two posterior ocelli, 1st joint of flagellum a little shorter than the scape, 2nd joint three times as long as the 1st, last joint nearly as long as the two preceding together.

Pronotum exposed, not quite so wide as the head. Mesonotum a little longer than wide, with the parapsidal sutures and anterior Mayrian furrows sharply defined. Scutellum moderately gibbous, less than one-third the length of the mesonotum, from which it is separated by a deep crenate suture. Dorsum of epinotum wider than long, sloping gradually into the declivity. Node of petiole like that of the ♂, but narrower and more parallel-sided. First segment of abdomen convex in front and at the sides, 2nd segment a little longer than the 1st, and wider than long. Pygidium produced into a long spine. Wings hyaline, nervures and stigma pale yellow.

Bulawayo, under stones, in small colonies of less than a dozen individuals. (S.A.M., R.M., G.A. colls.)

SUB-GENUS BOTHROPONERA, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 717, 1862.

Key to the ♂ & ♀ of Pachycondyla. (Sub-Genus *Bothroponera*, Mayr.)

- | | | | |
|-------|----|--|--|
| (10). | 1. | Head, thorax, and basal segments of abdomen coarsely punctured. | |
| (5). | 2. | Mandibles striated. | |
| (4). | 3. | Node of petiole widely emarginate posteriorly | <i>cariosa</i> , Emery. |
| (3). | 4. | Node of petiole sharply truncate posteriorly | <i>cavernosa</i> , Roger. |
| (2). | 5. | Mandibles not striated. | |
| (7). | 6. | Node of petiole widely emarginate posteriorly, a golden pubescence on the whole body | <i>granosa</i> , Roger. |

First abdominal segment nearly twice as wide as the node of petiole, and with a small truncate projection below at the extreme base. Abdominal constriction well marked. Second segment slightly wider than the 1st, but not longer. Anterior tarsi with thick golden-brown hairs beneath.

Transvaal.

Var. RHODESIANA, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 109, 1913.

This differs from the type in its larger size, 13 mm. ♀, and more abundant pilosity. The node of the petiole is not so smooth, and is, like the abdomen, duller.

♂ (hitherto undescribed). 10 mm. Head black; mandibles, clypeus, antennae, legs, and last abdominal segment occasionally, reddish yellow. Thorax dark castaneous brown, pronotum somewhat lighter. Epinotum, petiole, and abdominal segments reddish brown, the apical margins of the latter testaceous yellow.

Head transverse; clypeus produced and raised in the middle anteriorly. The frontal carinae are very short and indistinct. Eyes very large and reniform. Antennae filiform, reaching back as far as middle of 2nd abdominal segment. Pronotum only slightly exposed dorsally. Mesonotum with a central impressed line, broken in the middle; the Mayrian furrows distinct, the lateral ones less so. A crenate sulcus separates the mesonotum from the rather gibbous scutellum. Epinotum rounded, the declivity with a raised central line. Node of petiole sloping in front, rounded above and with a faint median impression, vertical behind and longer than wide. Seen from above, the petiole has a minute tooth on each side at the extreme base, and a slightly larger tooth beyond the latter. The ventral lamella is produced into a very short obtuse angle. First abdominal segment beneath with a truncate process at the extreme base similar to that of the ♀. Abdominal constriction distinct. Legs long and slender. Wings hyaline, nervures yellow, stigma dirty yellow. Body rather shining and covered with a silky grey pubescence. There is a sparse pilosity on the margins of the last three abdominal segments. Head and thorax very finely, closely, and shallowly punctured; base of epinotum a little more coarsely and rugosely punctured. Abdomen impunctate.

This variety is common round Bulawayo. The nest is generally placed under a stone, with several entrances which are surrounded by loose earth; the male is very common at light.

(S.A.M., R.M., G.A.)

/ P. LAEVISSIMA, n. sp. (Plate II., figs. 15, 15a.)

♂. 12 mm. Black; antennae, mandibles, outer angles of frontal carinae, and articulations of the legs piceous red; extreme margins of abdominal segments pale. The whole body is very shining, punctured all over with very fine, sparse punctures, from which arise the pubescent hairs. Intermixed are other larger punctures which are very shallow and scanty on the 1st abdominal segment, deeper, larger and more abundant on the node of the petiole and on the head, and very sparse on the thorax. The pubescence on the body is very scanty and inconspicuous, but less so on the apical segments of the abdomen. Pilosity of the body meagre, consisting of a few short hairs; pale and denser on the legs.

Head quadrate, sides slightly convex, posterior margin straight, very convex above, posterior angles rounded. Mandibles triangular, moderately shining and very finely striate, sparsely and strongly punctured, the punctures larger and elongated along the masticatory margin. The latter carries 7 teeth, and is but little shorter than the basal margin. Clypeus striato-rugose, angularly produced in the middle, sub-carinate, and with a row of deep punctures along the anterior margin. The frontal carinae are very broad in front, and excepting their extreme lateral margins which are smooth and shining, are more closely punctured than the rest of the head. Eyes rather small, situated a little in front of the middle of the sides of the head. Antennae extend back as far as the apex of the epinotum; scape incrassate towards the apex, the flagellum only slightly so. First joint of flagellum two-thirds as long as the 2nd, the latter hardly longer than the 3rd.

Pro-mesonotal suture distinct, meso-epinotal suture obsolete. Pronotum convex above, rounded in front and at the sides, a little wider than long. Mesonotum as long as the pronotum. Dorsum of epinotum merges into the declivity by a very gradual curve. The declivity is very oblique and feebly margined laterally. (The profile of the thorax is a segment of a circle and more convex than *P. cavernosa*, Roger.) Node of petiole trapezoid, wider behind than in front, wider than long, rounded above, vertically truncate in front and behind, and nearly as high as 1st abdominal segment. The sides of the 1st and 2nd abdominal segments very convex, the constriction between them strong. The 1st segment is narrower at the base than at the apex, as long as the 2nd segment but not quite so wide. Legs moderately long.

Saldanha Bay, Cape Prov., Type in my collection.

(S.A.M., R.M., G.A. colls.)

P. SOROR, Emery.

Ann. Soc. Ent. Belg., vol. 43, p. 472, ♂ ♀, 1899.

♂. 7-8.5 mm. Black; mandibles and legs dark chestnut-red. Scape, flagellum, and clypeus red-brown, the last joint of flagellum dark red at the apex. Calcaria, and the long hairs on the thorax and abdomen, orange. A fine golden-grey pubescence all over, as in *P. Krügeri*. Occipital margin of head straight, the corners rounded, the sides slightly convex. Clypeus raised and sub-carinate in the centre, rounded in front, the raised area shining. Frontal carinae wide in front, narrow behind and divergent. Mandibles smooth and shining, with a few large, deep punctures, chiefly on the inner margin. First joint of flagellum a little longer than the 2nd, 3rd to 6th joints as long as broad, 7th to 10th slightly broader than long, apical joint flattened and nearly twice as long as the penultimate. Head and thorax finely and closely punctured, node of petiole more coarsely punctured, 1st and 2nd abdominal segments finely but very distinctly punctured. There are large, shining, piligerous punctures on the body, proportionately larger than in *Krügeri*. The epinotum has the declivity widest in the middle, lozenge-shaped, slightly shining and distinctly margined at the sides. Proportionately the node of the petiole is wider than in *Krügeri*, and is also flatter on top, otherwise similar. The abdominal constriction is not so marked as in that species. In size and general appearance this species is deceptively like *Euponera caffraria*, from which it can be distinguished on closer inspection by the thick node of the petiole, which in *caffraria* is squamiform.

This is a rather rare species in the neighbourhood of Bulawayo. It usually nests under stones, and has a very strong smell of cockroaches. The colonies do not usually comprise more than two dozen individuals. (S.A.M., R.M., G.A. coll.)

P. CARIOSA, Emery.

Ann. Soc. Ent. France, vol. 63, p. 20, ♂, 1895.

“ ♂. 11 mm. Black; mandibles, flagellum, articular portions of the legs and tarsi rufescent, margins of the abdominal segments and the anus narrowly testaceous; very coarsely punctured and also longitudinally striate, with a dense flavous pubescence. Clypeus carinate and produced in the middle, mandibles striate and punctured, node of petiole sub-trapezoid, widely emarginate behind. . . . The petiole is wider behind than in front, depressed in the middle of the posterior margin so as to make it appear widely emarginate. The

insect is dull, more so than in *pumicosa*, which is due to the spaces between the large punctures being also closely punctured, or almost striated in parts; . . . the pubescence is longer and more recumbent than in *strigulosa*; the last two abdominal segments are not striated. The mandibles are finely striated and punctured. Delagoa Bay."

P. CAVERNOSA, Roger.

Berlin Ent. Zeitschr., vol. 4, p. 288, ♀, 1860.

" ♀. 13 mm. Brownish black; antennae, mandibles, and legs red, slightly shining, covered with very short reddish-yellow pubescence. The whole body is densely punctate with coarse and somewhat confluent punctures. The punctures of the 2nd abdominal segment are sparser, shallower, and smaller, giving this segment a rather smooth appearance. The head is wider than the thorax, quadrangular, rounded in front and behind, and also very feebly emarginate behind. The eyes are situated in front of the middle of the sides of the head. The frontal carinae are thick, lobate, horizontal, and divided by a deep central line. The 12-jointed antennae are inserted in a deep depression at some distance from the anterior margin of the head, as well as from each other; the scape is sparsely clothed with erect hairs and reaches back as far as the occiput; the 2nd and 3rd joints of the flagellum of equal length, and a little longer than the 1st; the apical joint as long as the two preceding together. Clypeus arched in the middle, feebly carinate and slightly impressed transversely along the anterior margin. The mandibles are triangular, not much elongated, finely and longitudinally striate or rugulose, more coarsely on the inner margin, which has 6 to 7 blunt teeth. The prothorax is wider than the rest of the thorax, rounded at the sides, narrow and lower in front and separated from the mesothorax by a depressed line; the rest of the thorax without sutures, compressed laterally and feebly convex towards the base, the declivity of the epinotum abruptly truncate. The sides of the thorax not rugose. The node of the petiole is as wide as the epinotum but narrower than the 1st abdominal segment, higher than long, perpendicular behind, rounded in front and strongly so above; ventral lamella with a small tooth. The 1st abdominal segment is perpendicular in front, rounded above, wider than long, rounded at the sides and constricted behind. The 2nd abdominal segment is wider than long, with a fine median longitudinal line. All the tibiae with pectinate calcaria. The tibiae, metatarsi and tarsi almost of equal length. The front legs have the metatarsi shorter than the

tibiae, and like the latter at their apices, are densely clothed with golden hairs. Claws simple. Cape."

P. STRIGULOSA, Emery.

Ann. Soc. Ent. France, vol. 63, p. 19, ♂, 1895.

" ♂. 10 mm. Black; mandibles, antennae, and tarsi piceous, margins of abdominal segments and anus smooth and testaceous; closely punctured with very coarse punctures and very finely longitudinally striate, dull, scarcely pubescent, and with a pilosity of short golden hairs. Clypeus carinate and produced in the middle, coarsely punctured but not striate; node of petiole truncate posteriorly. Kimberley."

"Closely allied to *pumicosa*, which it resembles in the shape of the body, unstriated mandibles and puncturation intermixed with fine striae; the latter, however, are more numerous and stronger, giving this species a duller appearance. The abdomen is wholly dull, even the apical segments. In *pumicosa* the last three segments are shining, the antepenultimate less strongly striated than the preceding, and the following segments only punctured."

P. GRANOSA, Roger. (Plate II., fig. 16.)

Berlin Ent. Zeitschr., vol. 4, p. 290, ♀, 1860.

" ♂. Black, apex of abdomen and tarsi rufescent, moderately shining, pilosity very short, pubescence golden yellow, punctured all over, node of petiole sub-emarginate posteriorly. 14 mm."

"This species is very similar to *cavernosa*, but differs from it in the following characters: the whole body is covered with a very fine recumbent yellow or yellowish-red pubescence, which gives the body when seen from the side a yellow silky tinge. The sculpture of the head is not so coarse as in *cavernosa*, the punctures are farther apart and are not confluent; the punctures are also shallower. The space between the punctures is finely striate. The apex of the frontal carinae is smooth, shining, and of a reddish colour; the mandibles are dark red, shining, not striated but punctured with rather coarse and fine punctures intermixed. The head is somewhat longer than in *cavernosa*. The clypeus is sharply carinate. The punctures of the thorax are large and shallow, the interspace rugulose. The node of the petiole is slightly rounded in front, the posterior face is vertical but the dorsal margin of same widely emarginate, flat above, narrower in front than behind; below, the ventral lamella is produced into a tooth pointing backwards. The 1st abdominal segment, seen

from above, is almost quadrangular and with the sides only slightly convex, a little wider than long, and like the node strongly but not closely punctured, more strongly so than the thorax. The 2nd segment is more feebly punctured than the 1st, the rest only indistinctly. The apical margins of the abdominal segments are reddish. The claws are small and simple."

P. PUMICOSA, Roger.

Berlin Ent. Zeitschr., vol. 4, p. 290, ♀, 1860. Forel, Rev. Suisse Zool., vol. 9, p. 244, ♂, 1901.

♀. 12-13 mm. Black; mandibles, flagellum, apex and base of scape, the legs, and apex of abdomen dark castaneous red. A thin golden pubescence all over; a golden-brown pilosity on the node of the petiole and on the abdomen. The sides of the head, thorax, node, and 1st abdominal segment strongly and deeply punctured. The punctures on the node and 1st segment are very large and rather confluent, making the sculpturation almost rugose. The vertex of the head somewhat finely punctured. Second abdominal segment with shallower punctures than the 1st segment,* 3rd and 4th very finely punctured, pygidium impunctate. The spaces between the punctures on the first three segments striate, very finely so on the 3rd segment. Sides of head slightly convex, rounded at the corners in front and behind, hardly emarginate posteriorly. Clypeus feebly produced and carinate in the middle, the carina obtuse at the apex. Frontal carinae wide in front, smooth and moderately shining, as in *granosa*. Mandibles triangular, shining and punctured. Eyes nearer the middle of the sides of the head than in *granosa*. The scape of the antenna hardly reaches back as far as the occiput; flagellum more clavate than in *granosa*, 7th to 10th joints wider than long. Pro-mesonotal suture distinct; declivity of epinotum shining, and less steep than in *granosa*. Node of petiole narrower in front than behind, rounded in front and above, sub-trapezoid, posterior face vertical and slightly concave. Ventral lamella angularly produced, but not toothed. Otherwise similar to *granosa*.

"♂. 9.5 mm. Testaceous yellow; head brown; mesonotum and scutellum brown with yellowish patches. The eyes occupy the whole of the sides of the head. Ocelli large and placed on a raised area. Wings pale yellowish, with nervures and stigma also pale. Sub-opaque, very finely punctured and pubescent."

Cape Prov. (Brauns, Drege.) Natal. (Haviland.)

* Roger says, "As coarsely punctured as the 1st segment"; the punctures are as large, but certainly not so deep, when seen from above.

Race BERTHOUDI, Forel.

Rev. Suisse Zool., vol. 9, p. 344, ♀, 1901. Ann. Soc. Ent. Belg.,
vol. 57, p. 109, 1913.

This form has been sunk to the rank of a race by Forel, but I can find only the following differences, which appear to me to be worthy of only varietal rank. The node is slightly narrower posteriorly than in the type, the puncturation of the head is a little larger and the 1st abdominal segment a little wider. I append the following description of the ♂, since that of the type is so meagre.

♂. 10 mm. Legs, pleurae, epinotum, node, abdomen, and antennae bright ochreous yellow; head dirty yellow below the antennal sockets, brown above. Thorax yellow-brown. Clypeus slightly raised in the middle. Frontal carinae obsolete. The eyes occupy the whole of the sides of the head; the ocelli large, and situated on a raised area. Antennae filiform, reaching back almost to the apex of the 1st abdominal segment. Prothorax very little exposed. Pro-mesonotal and meso-metanotal sutures distinct. The scutellum gibbous with the sides strongly striated. Mesonotum very shallowly punctured. Epinotum punctured at the sides, very shining and smooth above. Node of petiole narrow and parallel-sided, rounded above and in front, and less so behind. Lamellar tooth distinct but small. Constriction between the 1st and 2nd abdominal segments distinct. Abdomen impunctate. The whole body clothed with a dense, downy and pale pubescence.

Willowmore, Cape Prov. (Brauns.) Valdezia, Transvaal.
(Berthoud.) (S.A.M., R.M., G.A. coll.)

GENUS EUPONERA, Forel.

Grandidier's Hist. Madagascar, vol. 20, p. 126, 1891.

Ponera (pars), Smith, Roger, Mayr, etc.

Formica (pars), Fabricius.

Characters.

♀. Mandibles sub-triangular, the masticatory margin dentate and forming a distinct angle with the basal margin. Eyes placed on or in front of the anterior third of the head, sometimes absent or considerably atrophied. Meso-epinotal suture distinct, otherwise like *Pachycondyla*.

♀. Always winged.

♂. As in the sub-genera.

The genus is divided into four sub-genera as follows:—

Key to the ♂ ♀ of the Sub-Genera of Euponera.

- (2). 1. Mandibles elongate, the masticatory margin long, with numerous teeth; 1st joint of flagellum usually shorter or of the same length as the following, rarely longer *Mesoponera*, Emery.
- (1). 2. Mandibles rather short, with few teeth; 1st joint of flagellum much longer than the 2nd.
- (4). 3. Length 9–10 mm.; mandibles with 8 teeth; Madagascan species.
Euponera, Forel.
- (3). 4. Insect much smaller.
- (6). 5. Mesonotum gibbous; surrounded by a deep suture; 1st joint of tarsi of the middle pair of legs not bristly on the dorsal surface. *Brachyponera*, Emery.
- (5). 6. Mesonotum depressed, the surrounding suture not deep; tarsi of the middle pair of legs short, and bristly on the dorsal surface.
Trachymesopus, Emery.

SUB-GENUS MESOPONERA, Emery.

Ann. Soc. Ent. Belg., vol. 45, p. 43, 1901.

Characters.

♀. Clypeus rounded, rarely pointed on the anterior margin. Mandibles elongate, with numerous teeth. Maxillary palpi 4-jointed. 1st joint of flagellum shorter or of the same length as the 2nd, rarely longer. Thorax generally elongate; mesonotum more or less oval and surrounded by a suture; dorsum of epinotum in the elongate species equal in length to the pro- and mesonotum together. Legs, and especially the tarsi of the middle pair, long and slender, the tarsi rarely bristly.

♀. As in the ♂.

♂. Emery remarks ("Genera Insectorum") that he knows of no character sufficient to distinguish the ♂ ♂ of this sub-genus from those of *Pachycondyla*.

Key to the ♂ ♀ of Mesoponera.

- (6). 1. Large species, more than 6 mm. long.
- (3). 2. Insect 9 mm. long, whole body dull *caffraria*, Smith.
- (2). 3. Longer than 9 mm., at least the greater part of the body shining.
- (5). 4. 10.5 mm. long, head duller than the thorax and abdomen, fovea on the mandibles shallow and transverse *Peringueyi*, Emery.
- (4). 5. 11–13 mm. long, head not duller than the thorax and abdomen, fovea on the mandibles deep, sharply defined and oblique *Havilandi*, Forel.
- (1). 6. Small species, less than 6 mm. long.
- (8). 7. Colour black or nearly so *fossigera*, Mayr.
- (7). 8. Colour brown or yellowish brown . . . *Elizae*, Forel, var. *rotundata*, Emery.

E. (MESOPONERA) CAFFRARIA, Smith. (Plate II., fig. 17, 17*a*, and Plate III., fig. 22.)

Cat. Hymen. Brit. Mus., vol. 6, p. 91, ♀, 1858. Mayr, Ann. Nat. Mus. Wien, vol. 10, p. 124, ♀, 1895.

♂. 9 mm. Black and dull; mandibles castaneous red; flagellum, tarsi, and last abdominal segment dorsally, brown. The whole body covered with an excessively fine and short pubescence, which is, however, dense enough to give the surface, viewed obliquely, a greyish-yellow tinge. Head, thorax, and apical half of all the abdominal segments microscopically punctured, the basal invaginable portion of the latter shining and impunctate. A scanty pilosity of short, thin, pale hairs on the head and thorax, and longer on the abdomen, particularly the last three segments. Clypeus raised in the middle, with a central shining line, hardly produced backwards between the frontal carinae. Mandibles smooth, with a few large punctures on the inner margin. Frontal carinae only slightly widened anteriorly, the impressed line between rather faint. Scape of antenna hardly reaching the occiput; flagellum feebly incrassate towards the apex. Eyes small, their long diameter not exceeding two-thirds the length of the apical joint of flagellum. Sides of head convex, anterior and posterior corners rounded, the former widely so; posterior margin feebly arcuate. Head wider than thorax. Pronotum convex in front and at the sides; dorsum of epinotum flat, narrowest at the base, where it is less than half as wide as the mesonotum; declivity shining and steep, lateral margins tumid. Node of petiole squamiform; seen from above, triangular; thickest at the base, much wider above than below, rounded above; posterior face perpendicular and shining. Ventral lamella with an obtuse projection. Abdomen oblongo-ovate, 1st and 2nd segments of about equal length, the constriction between them feeble. The 1st segment ventrally, has a slight median projection at its junction with the petiole.

♀. 10.5 mm. Mesonotum and scutellum together, seen from above, more than twice as long as the pronotum. Dorsum of epinotum short, not so long as scutellum. Wings smoky, nervures and stigma brown. Otherwise like the ♂.

♂. 8 mm. Black and dull; tibiae and tarsi yellow-brown, the margins of the abdominal segments impressed, shining and testaceous brown. Head, thorax, petiole and abdomen, except the apical segment, closely, finely and reticulately punctured; the sides of the posterior portion of the mesonotum deeply excavated, shining

and striated. Head about one-third wider, across the eyes, than it is long. Clypeus raised and carinate in the middle. Frontal carinae distinct but very short. Antennae long and filiform, reaching back as far as apical margin of 3rd abdominal segment, scape very short, barely twice as long as the 1st joint of flagellum; 2nd joint three and a half times as long as the scape. Eyes not very large, occupying but little more than the anterior half of the sides of the head; ocelli small, situated on a slightly raised area. Pro-mesonotal suture distinct; the gibbous scutellum is separated from the mesonotum by a crenate impression. Pronotum exposed, seen from above only two-thirds as long as scutellum; dorsum of epinotum as long as the scutellum, the declivity oblique and not abrupt. Node of petiole similar to that of the ♀, but smaller and more convex posteriorly; ventral lamella not produced. The abdomen widens towards the apex; 1st segment not so wide as the 2nd and 3rd, the latter almost twice as wide as long; constriction between the 1st and 2nd feeble. Apical segment shining and nearly impunctate; pygidium ending in a short spine. Legs thin and slender; tarsi of middle and hind legs as long as the tibiae. Wings slightly smoky, nervures pale brown, stigma dark brown.

S. Rhodesia, common; Willowmore. (Brauns.) Natal. (Cooper and Marley.)

(S.A.M., R.M., G.A. colls.)

E. (MESOPONERA) PERINGUEYI, Emery. (Plate II., fig. 19.)

Ann. Soc. Ent. Belg., vol. 43, p. 474, ♀, 1899.

♂. 10.5 mm. Black; antennae, tibiae, and tarsi piceous brown, mandibles ferruginous brown. Shining, especially the abdomen and pronotum. Clypeus and sides of pronotum very finely rugulose, pleurae finely striate, all the rest of the body finely and evenly punctured. The punctures are very dense on the head and epinotum. Mandibles shining, with irregular and coarse punctures and a shallow, lateral and transverse fovea near the base. A fine grey pubescence on the whole body, inconspicuous and rather irregular; pilosity absent. Head very similar to that of *E. sennaarensis*, Mayr, but the frontal carinae are more divergent behind, and reach to the level of the posterior margin of the eyes. The latter are relatively smaller and more convex. The clypeus is obtusely carinate in the middle, smooth and shining. Mandibles with 12-14 alternating large and small teeth. Antennae long, reaching back as far as base of 1st abdominal segment; flagellum very slightly incrassate towards the

apex. Sides of head moderately convex, posterior angles rounded. Pronotum wider than long, the dorsal region distinctly, and rather angularly delimited from the sides. Mesonotum ovoid, narrower at the base. Pro-mesonotal suture well defined, meso-epinotal suture a little less distinct. Dorsum of epinotum narrow, very little longer than the mesonotum; declivity triangular, with a faint median longitudinal impression. Node of petiole rounded above, convex from side to side in front, and flat behind. Seen in profile, vertically truncate in front, steeply sloping behind, and with sharply defined lateral margin separating the anterior and posterior faces. Ventral lamella triangularly produced along its whole length. The basal face of the 1st abdominal segment is vertically truncate, forming a distinct, though obtuse, angle with the dorsal surface. Below, at its junction with the petiole, the segment is produced into a strong tooth. Second abdominal segment slightly wider and longer than the 1st, the constriction between the two segments feeble. Seen from in front or behind the node of the petiole is wider above than below, and of an ovoid shape. Legs comparatively long. Claws with a small tooth near the base.

Nord Hoek and Saldanha Bay, Cape Prov. (Péringuey.) (S.A.M. and G.A. colls.)

E HAVILANDI, Forel. (Plate I., fig. 9.)

(*Megaponera*, sub-genus *Hagensia*), Rev. Suisse Zool., vol. 9, p. 333, ♂, 1901.

(*Euponera sulcigera*), Mayr, Verh. Zool. Bot. Ges. Wien, vol. 54, p. 593, ♀, 1904.

♂. 11–12 mm. Black, mandibles more or less castaneous red, legs and antennae brownish black. The whole body sub-opaque, the posterior face of the node of the petiole shining, finely pubescent, closely and very finely punctured all over, except the posterior face of the node which is less densely punctured, and the declivity of the epinotum which is reticulate-punctate or very finely rugulose. A few long hairs on the mandibles and apex of the abdomen. Head very little longer than wide, with the posterior angles considerably rounded, the sides moderately convex. Clypeus very convex in the middle, hardly carinate. Frontal area lanceolate, the depression or sulcus behind it moderately long. Eyes within the anterior half of the head, and separated from the base of the mandibles by a distance a little longer than their own long diameter. Mandibles shining, finely striate near the base, sparsely and coarsely punctured near the apex, with 13–15 irregular teeth, and a deep oblique fovea

near the base, much more sharply defined than in *Peringueyi*. Scape of antenna cylindrical and reaching back beyond the occipital margin; 2nd joint of flagellum longer than the 1st, all the joints long and cylindrical. Pronotum as long as wide, its dorsum convex, sub-quadrangular, and margined behind and at the sides by a raised line (more pronounced than in *Peringueyi*), which terminates before the anterior margin. Pro-meso, and meso-metanotal sutures well defined, the latter more strongly so than in *Peringueyi*. Dorsum of epinotum more compressed and much narrower than in *Peringueyi*, the declivity is triangular but narrower, and its sides are more sharply marginate than in that species. The declivity above, at its junction with the dorsum, has a longitudinal depression, which is bounded on each side by the lateral margins. Node and abdomen as in *Peringueyi*, but the abdomen is longer and narrower in proportion, and the constriction between the 1st and 2nd segments is entirely absent; the 1st segment below, at its junction with the petiole is also produced into a strong tooth, as in *Peringueyi*, but the ventral lamella of the petiole is larger and less blunt at the apex than in that species. Legs long and slender, with two calcaria to the middle and hind legs, and the claws of the tarsi with a small tooth near the middle.

♂ (hitherto undescribed). 12 mm. Black, legs brownish black with the tarsi paler, mandibles ferruginous. Head and thorax very finely punctured, but more densely so than in the ♀; the mesonotum is almost reticulate-punctate, the epinotum shallowly rugulose, the petiole impunctate, 1st abdominal segment very sparsely and finely punctured, the remaining segments microscopically punctate. The whole body pubescent as in the ♀, but the pubescence on the thorax is very sparse. Head dull, thorax sub-nitidulous, abdomen very shining. Head wider across the eyes than it is long, considerably contracted in front of the eyes. The latter large, occupying about one-third of the sides of the head, the internal margins feebly sinuate. Ocelli large, situate on a raised area. Clypeus very convex from side to side and rather long (as long as the scape), the anterior margin almost straight. Mandibles oblong, very small, hardly meeting together when closed, edentate. Frontal carinae obsolete. Antennae very long, reaching back almost to the apex of the abdomen, scape half as long as the 3rd joint of the flagellum; the 1st joint of the latter is very short, being less than half as long as the scape, the 2nd joint a little longer than the 3rd, all the joints except the 1st long and cylindrical. Pronotum only slightly exposed, mesonotum as long as wide, raised, round in front and convex from side

to side, concave posteriorly, and on each side with a slight depression internal to the parapsidal sutures, which are well defined. A raised central line runs back from the anterior margin of the mesonotum for about one-third of its length. A deep crenate sulcus separates the mesonotum from the scutellum; the latter is gibbous, somewhat triangular and with the sides striate. Metanotum short, with a small tubercle in the centre. The dorsum of epinotum, as long as the mesonotum, merges gradually into the declivity; the latter has on each side a small boss above, but its lateral limits are feebly defined. Petiole long, three times as long as wide, slightly raised into a node at its middle third; at its extreme base, furnished with a minute recurved tooth at each side, and a little posterior to these, there is a distinct lateral tubercle. Abdomen lanceolate, 1st segment distinctly longer than wide and very narrow at the base, 2nd segment also longer than wide and about as long as the 1st, the other segments wider than long. Pygidium produced into a sharp curved spine. Apex of abdomen piceous. Legs very long and slender, with two calcaria to the middle and hind tibiae; claws furnished with a small tooth, nearer to the apex than in the ♂. Wings smoky, stigma dark brown, a closed radial cell present, as in *E. caffraria* and *sennaarensis*. Alar expanse 20 mm.

1 ♂ taken with the workers by the Rev. R. Godfrey at King William's Town, type in S.A. Museum.

Natal. (Haviland, Wroughton.) Grahamstown. (Hewitt.)

The ♀ ♀ from King William's Town are slightly larger than the original specimens from Natal (13 mm.), but have the mandibles without any striae and a much more strongly defined and deeper fovea. They are also much more finely punctured and shining, not sub-opaque as in the Natal form, and the punctures are quite discrete and not reticulate. I am deterred from raising this form to varietal rank by an examination of a ♀ from Vredefort, in the S.A.M. collection, in which the puncturation is somewhat intermediate between the two described above, but in which there is also a very deep fovea on the mandible.

The characters in the male sex alone make it clear that the species is an *Euponera*. Moreover, in the worker the similarities to the ♀ of *E. Peringueyi*, Emery, are very marked. An examination which I was able to make of the two specimens in Dr. H. Brauns' collection, named by Mayr as *Euponera sulcigera*, made it certain that Mayr's species is the same as the one now described. Mayr's name must therefore be sunk as a synonym, and at the same time Forel's sub-genus must also be deleted. Should the characters of the ♂ of

E. Peringueyi Emery, at present unknown, prove to be similar to that of *Havilandi*, it might be desirable in the future to re-erect *Hagensia* as a sub-genus of *Euponera*, or even to make it a separate genus of the Ponerini. (S.A.M., R.M., G.A. colls.)

E. (MESOPONERA) ELIZAE, Forel, var. *ROTUNDATA*, Emery.

Ann. Soc. Ent. France, vol. 63, p. 20, ♀, 1895. Forel, Ann. Soc. Ent. Belg., vol. 57, p. 108, ♀, 1913.

The above variety alone has been found within our limits. It differs from the type from Madagascar in having the metanotum (epinotum) shorter, with a more rounded profile, and not in the least angular.

♀. 4.5 mm. Colour rather variable, castaneous brown or piceous brown, with the posterior half of the head, the margins of the pronotum, the sides of the epinotum and the apical margins of the 1st and 2nd abdominal segments much paler; 3rd-5th segments ferruginous. Antennae, mandibles, legs, and clypeus ferruginous yellow. Covered all over with a fine and dense yellowish pubescence. The flavous pilosity is very short and scanty on the head, thorax, and first two abdominal segments, longer and more abundant on the clypeus and apical abdominal segments. Head and thorax shining, the abdomen much more so. Head very shallowly and finely punctured, the rest of the body impunctate or nearly so, the mesopleurae very smooth and shining. Head longer than wide, almost parallel-sided, the posterior corners gently rounded. Clypeus raised sub-angularly in the middle, the anterior margin bearing in the centre a minute spine, plainly visible under a magnification of 30 diameters. Frontal carinae very narrow in the middle, diverging posteriorly.

Mandibles elongate and rather narrow; the masticatory margin with about 12 alternatingly large and small teeth, the apical tooth very acuminate. The scape extends back nearly as far as the occiput; 6th-8th joints of flagellum as broad as long. Eyes small and flat, situated within the anterior fourth of the head. Promesonotal suture distinct. Pronotum twice as long as the mesonotum, rounded in front, the sides somewhat flattened. Dorsum of epinotum short, about the same length as the mesonotum, very narrow at the base and widening towards the declivity. The latter is very smooth and shining, with the sides tumid, and a little longer than wide. Node of petiole, seen from above and in front, narrower than in *E. fossigera*, and only very little wider above than below,

rounded above, slightly convex anteriorly, and steeply sloping posteriorly. The ventral lamella prolonged into a large triangular tooth, pointing backwards.

Anterior portion of 1st abdominal segment flattened and sloping inwards. Abdomen more oblong and parallel-sided than in *E. fossigera*; 1st and 2nd segments of about equal length, and very little wider than long, the constriction between them feeble.

♀ (hitherto undescribed). 5.5–6 mm. Like the ♂, differing only in the following characters.

The colour is darker. The eyes are larger, and separated from the base of the mandibles by a little less than their own length. The ocelli are small. Pronotum, seen from above, half as long as the mesonotum. Pro-mesonotal suture distinct. The mesonotum is separated from the scutellum by a deep and wide groove. Dorsum of epinotum very short or almost obsolete. The epinotum is not compressed laterally as in the ♂, but is rather broad, with the sides slightly convex.

This species is not uncommon near Bulawayo. The nest is always placed under stones or logs, and seldom contains more than half a dozen workers. The latter avoid the light and are never seen at work in the open. (S.A.M., R.M., G.A. colls.)

Var. REDBANKENSIS, Forel.

Loc. cit., p. 109, ♂.

A little smaller than the type, the head a little broader, and the puncturation a little less dense. (G.A. coll.)

E. (MESOPONERA) FOSSIGERA, Mayr. (Plate II., fig. 20.)

Ann. K.K. Nat. Mus. Wien, vol. 16, p. 3, ♂, 1901.

♂. 5 mm. Black and moderately shining, thorax a little brighter. Mandibles, antennae, and legs ferruginous brown, 3rd and 4th abdominal segments yellowish brown, 5th segment dirty yellow. The whole body is covered with a fine, grey pubescence, and with some scattered longer hairs on the head and apical portion of the abdomen. Closely and very finely punctured all over. Clypeus raised towards the middle but not carinate, with a longitudinal median and shining line, and the anterior margin acuminate in the centre. Mandibles elongately triangular, covered with a moderate, yellow pilosity and furnished with rather small teeth; near the basal margin, externally, lies a small and shallow fovea. Frontal carinae narrowed in the middle of their length and divergent posteriorly. Eyes situated far

forwards and low down on the sides of the head, oval, and not longer than the 8th joint of the flagellum. Scape of antenna reaching back almost as far as the occiput; flagellum more clavate than in *sennaarensis*, 3rd and 4th joints a trifle wider than long, the 2nd and 5th-10th joints as long as wide, the apical joint twice as long as the preceding. Head very little longer than wide, the sides parallel, the posterior angles widely rounded. Pro-mesonotal suture distinct. Dorsum of epinotum narrow, twice as long as wide at the base and rounded at the sides; declivity oblique, its lateral margins distinct. Node of petiole wider above than below, the dorsal edge considerably rounded, much more so than in *sennaarensis*, convex in front, flat and vertical behind. First and 2nd abdominal segments sub-equal, wider than long; the constriction between them feeble.

Port Elizabeth. (Brauns.)

(G.A. coll.)

SUB-GENUS BRACHYPONERA, Emery.

Ann. Soc. Ent. Belg., vol. 45, p. 43, 1901.

Characters.

♂. Clypeus rounded in front and convex. Mandibles short and broad, with small crowded teeth. Maxillary palpi 3-jointed. First joint of flagellum much shorter than the 2nd. Eyes flattened, placed close to the anterior margin of the head. Thorax rather short; mesonotum gibbous, surrounded by a deep suture; dorsum of epinotum narrow at the base; declivity sometimes excavated so as to lodge the anterior face of the node. Node of petiole high and broad, squamiform and much thinned above. First joint of the tarsi of middle legs not furnished with stiff hairs or bristles on the upper surface.

♀. Similar to the ♂, excepting the usual sexual differences, but considerably larger.

♂. Larger than the ♀, not much smaller than the ♀. Antennae in our sole species short. Petiole squamiform and high. Abdomen not elongate, ovoid; constriction between 1st and 2nd segments feeble. Pygidium pointed or produced into a short spine.

E. (BRACHYPONERA) SENNAARENIS, Mayr. (Plate II., fig. 21.)

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 721, ♀, 1862.

♀. 5-6 mm. Black; antennae, all the tibiae and tarsi, the emora at the base and apex, ferruginous. Mandibles castaneous,

the margins black. Covered all over with a fine and close pubescence. The pilosity on the head and thorax very scanty, apical abdominal segment and clypeus with some longer yellowish-red hairs. Mandibles with short yellow hairs, very minutely striate and coarsely punctured, the apical tooth large. Head, thorax, and abdomen very finely and closely punctured. Head wider than the thorax, the sides convex, the posterior margin widely and rather deeply emarginate; including the mandibles the head is as long as the thorax. Clypeus raised but not projecting in the middle, excavated at the sides between the anterior margin and the antennal sockets. Frontal carinae nearly as wide in front as they are long. Antennae reach back as far as the petiole, flagellum gradually incrassate towards the apex, 1st joint slightly longer than the 2nd. Eyes moderately large, separated from the base of the mandibles by about their own length.

Pronotum, seen from above, one-third longer than the mesonotum, excluding the scutellum. Epinotum compressed at the base, widening and raised towards the declivity; the latter oblique but not descending abruptly from the dorsum. Petiole, seen from above, convex in front, with the posterior face concave in its lower half, vertical and shining, the upper half sloping slightly forwards. The anterior and posterior surfaces meet at the sides and above in a rather sharp edge. Ventral lamella produced into a blunt tooth pointing backwards. The abdomen is more shining than the rest of the body. Constriction between the 1st and 2nd segments almost obsolete. The 1st and 2nd segments sub-equal. Legs slender.

♀. 8-9 mm. Black; mandibles castaneous with the margins black. Antennae and all the tibiae and tarsi more or less ferruginous; femora dark reddish brown. Puncturation, pubescence, and pilosity as in the ♂. Head very little wider than the thorax and as long as the same, excluding the epinotum.

Pronotum as long as the scutellum. Epinotum wide, the dorsum very short or about two-thirds the length of the scutellum; the declivity very steep, rounded above, the lateral margins slightly prominent. Wings pale yellowish, nervures and stigma dark yellow. Otherwise like the ♂.

♂. 6-6.5 mm. Black; all the tarsi and last four joints of the flagellum brownish yellow; scape and basal portion of the flagellum brown; femora and tibiae at the extreme base and apex ferruginous. Pubescence similar to that of the ♀; a few long hairs on the scutellum, epinotum, and node. Mesonotum finely punctured laterally at the base; scutellum with very faint rugosity, the rest of

the body impunctate. Head and thorax shining, the abdomen more so, especially the pale apical margins of the segments.

Head square, not so wide as the prothorax, rounded posteriorly and feebly convex at the sides. Eyes rather prominent, occupying a little less than half the sides of the head. Clypeus rounded, the anterior margin depressed. Frontal carinae very short. Antennae filiform, reaching back as far as the petiole; scape two and one-third times as long as the 1st joint, and a little shorter than the 2nd joint of the flagellum.

Pronotum moderately exposed. Mesonotum with well-developed Mayrian furrows, and short, narrow, parapsidal sutures; separated from the very gibbous scutellum by a deep crenate impression. Epinotum as wide as the mesonotum behind the tegulae, sloping in a continuous curve from base to apex, so that there is no distinct dorsum. Petiole squamiform, very thin above, vertically truncate in front and behind, and seen from the front, apparently circular; seen under a high magnification, it is in reality of an angular outline and has a slight dorsal emargination. Ventral lamella produced into a large tooth, pointing backwards. Abdomen pyriform, in its widest part wider than the thorax. All the segments much wider than long. Pygidium angular but not spined. Legs slender. Wings hyaline, nervures and stigma pale yellow.

This is the commonest Ponerine ant around Bulawayo. A crateriform mound of fine earth generally surrounds the entrance to the nest, which is as often situated in the open as it is under stones. The economic value of this little species can hardly be over-estimated, since it is exceedingly plentiful and preys unceasingly on termites. It is, however, omnivorous, since it will eagerly collect bread-crumbs, insects of all sorts, and seeds of grass. Heaps of the latter are often found in the nests. (S.A.M., R.M., G.A. colls.)

SUB-GENUS TRACHYMESOPUS, Emery.

Genera Insectorum, Ponerinae, p. 84, 1911.

Characters.

♂ and ♀. Anterior margin of clypeus rounded or produced into a blunt and short point. Mandibles sub-triangular, with a distinct angle between the basal and masticatory margins; the latter usually furnished with only a few teeth. Maxillary palpi 4-jointed. First joint of flagellum distinctly longer and generally thicker than the following joint. Eye close to the anterior margin of the head. Mesonotum depressed, the surrounding suture not very deep. Tarsi

of the middle pair of legs short; the 1st joint of the tarsus with stout hairs or bristles on the dorsal surface.

♂. Abdomen with a distinct constriction between the 1st and 2nd segments. Pygidium produced into a sharp point.

E. (TRACHYMESOPUS) WROUGHTONI, Forel. (Plate II., fig. 18.)

Rev. Suisse Zool., vol. 9, p. 341, ♀ ♂, 1901.

♀. 5-5.3 mm. Head, thorax above excepting the mesonotum, petiole and dorsal portion of 1st and 2nd abdominal segments, dark brown. Mesonotum and ventral surface of abdomen reddish brown. Third, 4th, and 5th abdominal segments rusty yellow. The sides of the head castaneous. Antennae, mandibles, margins of pronotum, meso- and metapleurae and legs more or less ferruginous, the tarsi paler. Clothed all over with a fine golden pubescence. The pilosity consists of fairly long flavous hairs, evenly distributed. Head and thorax dull, abdomen slightly shining, declivity of epinotum and both faces of the petiole very shining.

Scape, head, and thorax very finely, closely and shallowly punctured. Abdomen exceedingly finely punctured. Neck of pronotum transversely rugulose. Head, excluding the mandibles, nearly quadrate or slightly longer than wide, sides moderately convex, posterior angles rounded, posterior margin shallowly emarginate. Clypeus short, sub-truncate anteriorly, raised and carinate in the middle. Mandibles finely striated, with a few coarse punctures on the masticatory margin, a long groove on the external margin, and an elongate fovea near the basal margin; the masticatory margin furnished with about 9 blunt teeth. Frontal carinae extend a little beyond the level of the posterior margin of the eyes. The latter small and flat, situated within the anterior third of the head, and separated from the anterior margin by a distance equal to their own length. Scape of antennae reaches back almost to the occiput; flagellum one-third longer than the scape; 3rd to 10th joints wider than long.

Pronotum rounded, with a distinct neck, and one and a half times as long as the mesonotum. The latter wider than long. Dorsum of epinotum round above; one and two-thirds as long as the mesonotum. The declivity rather steep, the margins slightly raised, especially above. Node of petiole in front convex from side to side, slightly concave dorso-ventrally, and concave behind. The summit a little flattened, the anterior and posterior faces do not meet laterally in such a sharp edge as in *sennaarensis*. The

constriction between the 1st and 2nd abdominal segments much stronger than in that species. Second segment a little longer than the 1st. Legs rather stout, and shorter than in *sennaarensis*.

“♂. 7–8 mm. Black; tarsi reddish brown; maxillary palpi 5-jointed. Mandibles rudimentary, without teeth. Antennae filiform; scape scarcely longer than broad; 1st joint of flagellum broader than long, 2nd joint very long and cylindrical. Head rounded, convex behind.

Pronotum exposed; scutellum gibbous. Dorsum of epinotum fairly long, distinct from the declivity. Node of petiole thick, subconical. First segment of abdomen small and short, the constriction between it and the following segment very strong, the other segments only feebly constricted. Sub-genital plate elongate and entire, pygidium produced into a long point. Wings brown. Sculpture and pilosity as in the ♀, but the mesonotum and scutellum are dull, with longitudinal striae.”

Natal. (Wroughton.) Knysna. (Brauns.)
(G.A. coll.)

Var. *CRUELIS*, Forel.

Loc cit.

“♀. 6–7 mm. Head larger, almost square, at least as wide as long, less contracted in front. The sides of the mesonotum have a dentiform angle on the anterior margin (less marked in the type). Dorsum of epinotum wider and shorter. Pilosity a little more abundant. Colour varies from a reddish testaceous yellow to a slightly reddish brown.

♂. Identical with the type form and of the same size.”

Natal. (Haviland.)

GENUS *PONERA*, Latreille. (Emery, emend.)

Hist. Nat. Crust. Insect., vol. 13, p. 257, 1805. Emery, Ann. Soc.

Ent. Belg., vol. 45, p. 41, 1901.

Characters.

♀. Head sub-elongate, sides slightly convex, wider behind than in front. Anterior margin of clypeus arcuate, or prolonged into a rounded lobe. Mandibles broad and triangular, with small teeth; maxillary palpi one- or two-jointed. Antennae clavate, with 5-jointed club, or only incrassate. Eyes small or absent. Mesopronotal suture usually distinct. Node of petiole squamiform or thick.

♀. Very similar to the ♂, and winged. The eyes larger, and ocelli are present. The node of the petiole is generally higher and thinner than in the ♂.

♂. In some species the ♂ is ergatoid; in the ordinary winged form the scape is nearly always shorter than the 2nd joint of the flagellum. Mesonotum gibbous, overhanging the pronotum. Pygidium generally aculeate. The eyes and ocelli large. Node of petiole similar to that of the ♀.

The following key to the ♀♀ of the genus is admittedly imperfect, but may be better, I hope, than none at all. Our various species of *Ponera* are so small and so much alike that it is not easy to pick out differences between them which can be seized at a glance, so that, unreliable as colour differences often are, I have nevertheless preferred to use them here rather than base the key on subtle distinctions requiring a minute inspection with the aid of a high-power lens. As I have not seen a specimen of *P. coarctata*, race *boerorum*, Forel, and since that author's description is very meagre, it is not possible to include it in the key.

Key to the ♀♀ of Ponera.

- (2). 1. Black species *Dideroti*, Forel.
- (1). 2. Yellowish or reddish species.
- (4). 3. Larger, 3·7 mm. long, colour pale chestnut red, head finely but clearly punctured *spei*, Forel.
- (3). 4. Smaller, not more than 3 mm. long, puncturation of the head less obvious.
- (8). 5. Head, excluding mandibles, clearly at least one-quarter longer than wide.
- (7). 6. Head one and a quarter times as long as wide; 2nd abdominal segment wider than long *Gleadowi*, Forel.
- (6). 7. Head one and a half times as long as wide; 2nd abdominal segment longer than wide. *Ragusae*, Em., r. *Bulawayensis*, Forel.
- (5). 8. Head, excluding mandibles, not obviously longer than wide, certainly less than one and a quarter times as long as wide.
- (10). 9. Dorsal surface of the node distinctly thicker in the middle than at the sides, or greatest thickness equals one-third of the width.
ergatandria, Forel, r. *cognata*, Santschi.
- (9). 10. Dorsal surface of node very little thicker in the middle than at the sides, or greatest thickness equals one-fifth of the width *dulcis*, Forel.

P. SPEI, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 423, ♀, 1910.

♀. 3·7 mm. Head, thorax, and node dark yellowish red, legs dirty yellow, abdomen rusty red, apex paler; the whole body

shining. Head finely and closely punctured, 1st and 2nd abdominal segments a little more coarsely punctured, thorax nearly impunctate. Covered all over with a fine and close grey pubescence, and with a few scattered and rather short pilose hairs on the thorax and abdomen. Head, excluding the mandibles, rectangular, and one-fifth longer than wide; the posterior angles widely rounded, the sides slightly convex, the posterior margin concave. Eyes very small, composed of four facets, situated in the anterior fourth of the head. Clypeus raised gradually towards the middle, the anterior half minutely sub-carinate on each side of the median line, and the anterior margin feebly bisinuate in the centre. Frontal carinae convergent posteriorly and very small. Mandibles smooth, shining and sparsely punctured; teeth very small. The scape reaches back as far as the occiput, flagellum one and a half times as long as the scape, incrassate towards the apex, 2nd-10th joints broader than long. Pro-mesonotal suture distinct, meso-epinotal much less so. Pronotum one-third wider and longer than the mesonotum. Pro- and mesonotum convex. Dorsum of epinotum convex transversely and widening towards the apex, where it joins the declivity in a gradual curve; declivity with the lateral margins slightly raised. Node of petiole twice as wide as long, rounded above and at the sides, vertically truncate behind and obliquely truncate in front. Ventral lamella of petiole produced into an obtuse point. Abdominal constriction moderate; abdomen a little longer than the thorax; 1st segment narrower in front than behind.

Natal. (Wroughton.) Algoa Bay. (Brauns.)
(G.A. coll.)

P. DIDEROTI, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 203, ♂ ♀ ♂, 1913.

♂. 3 mm. Black, legs, antennae, and mandibles dark yellow. Pilose hairs absent except on the clypeus, covered scantily all over with a short pale pubescence. Microscopically punctured, sparsely and shallowly on the thorax and first two abdominal segments, more densely on the head and sides of epinotum. Head a little longer than wide, sides and posterior margin almost straight or only very feebly convex, posterior angles rounded. Clypeus raised in the middle but not carinate, anterior margin convex. Frontal carinae small, moderately angulated laterally in front. Eyes small, situated low down and far forwards, separated from the base of the mandibles by a distance equal to their own diameter. The scape

reaches back as far as the occipital margin, 1st joint of flagellum nearly twice as long as wide, as long as the two following joints taken together, 2nd joint not much wider than long, 3rd-10th joints decidedly wider than long, terminal joint as long as the two preceding together. Mandibles shining, sparsely punctured, masticatory margin with about 4 or 5 small teeth, the apical tooth well developed. Thoracic sutures well defined. Pronotum almost as long as wide, anterior margin convex, much narrower in front than behind. Mesonotum two-thirds as long as the pronotum; dorsum of epinotum flat, and as long as the declivity, the latter not very oblique, its sides slightly margined. Node of petiole convex from side to side in front, narrow above, vertical behind, and nearly so in front, quite twice as wide as long; ventral lamella produced into a convex projection at the base. 1st abdominal segment a little shorter than the 2nd, wider than long, the face of the 1st segment in front vertical, intersegmental constriction feeble.

♀. 3.7 mm. Eyes larger than in the ♂. Pronotum twice as wide as long; mesonotum two-thirds as long as the pronotum, dorsum of epinotum half as long as the pronotum, the declivity less oblique than in the ♂, and with the brow of the declivity obtusely emarginate. First and 2nd abdominal segments a trifle wider than long, 2nd segment a little longer than the 1st. Wings with a yellowish tinge, nervures very pale. Other characters as in the ♂.

♂. 3.6 mm. Black, legs, antennae, and apical segment of abdomen light brown. Clothed with a very sparse pale pubescence. Whole body shining. Head, thorax, and petiole very shallowly and finely punctured. The points of insertion of the pubescent hairs on the abdomen are so shallow that they can hardly be called punctures. Head sub-quadrate, excluding the clypeus, a little wider than long. The clypeus projects rather far forwards and is gibbous, the anterior margin obtusely angular in the middle. Mandibles truncated at the apex, the apices not meeting. Eyes very large, situated within the front half of the head. Ocelli small, placed on a very slightly raised area. Frontal carinae feebly developed, with a deep impressed line between them which reaches back as far as the anterior ocellus. Antennae filiform or only slightly thickened towards the apex; scape twice as long as the 1st joint of the flagellum, but not longer than the distance separating the two posterior ocelli. The antennae reach back as far as the brow of the epinotum. Pronotum short and exposed; mesonotum about one-third wider than long, anterior margin round, parapsidal furrows well defined, separated by a deep suture from the scutellum. The latter is

moderately gibbous, and half as long as the mesonotum. Dorsum of epinotum as wide as long, and as long as scutellum and metanotum together, the declivity very smooth and shining. Node of petiole like that of the ♀, but not so thick. Abdomen ovate, 1st segment as long as the 2nd, all the segments much wider than long.

Knysna. (Dr. H. Brauns.) (S.A.M., R.M., G.A. colls.)

P. RAGUSAE, Emery, race BULAWAYENSIS, Forel.

Emery, II Natural Sicil., 1895. Emery, Mem. Accad. Sc. Bologna (5), vol. v., pp. 292, 297, 1895. Forel, Deutsch. Ent. Zeitschr. Beiheft, p. 203, ♀, 1913.

♂. 2.4–2.8 mm. Reddish yellow. Antennae and body covered with a whitish pubescence, somewhat sparse on the head and thorax. Head and thorax dull, microscopically punctured. Head a little wider behind than in front, half as long again as wide, sides feebly convex or almost parallel-sided, posterior margin moderately concave, posterior angles rounded. Eyes absent. Mandibles triangular, masticatory margin with about 6 or 7 small teeth. Clypeus short, anterior margin obtusely angular in the middle. Frontal carinae broad and flat. Scape of antenna widened towards the apex, not reaching back as far as the occipital margin; the whole antenna reaches back as far as the base of the epinotum; flagellum clavate, 1st joint a little longer than wide, and as long as the three following joints taken together, 2nd–10th joints wider than long, last joint a little longer than the two preceding joints together and twice as long as wide. Thorax rather flat dorsally; pro-mesonotal suture distinct, meso-metanotal obsolete. Pronotum as wide as long, but narrower than the head, anterior margin and sides convex. Meso- and epinotum narrower than, and, taken together, one-quarter longer than the pronotum; declivity of the epinotum oblique, smooth and shining. Node of petiole seen from above sub-quadrate, the sides slightly convex, narrower in front than behind, a little wider than long, and not including the ventral lamella, only a trifle higher than thick; seen in profile, convex above from side to side, anterior and posterior faces vertically truncate; ventral lamella produced into a long keel, slightly nicked in the middle. Abdomen elongate, as long as thorax and petiole together. First segment as long as, or a little longer than wide, 2nd segment one-quarter longer than wide and longer than the 1st; the anterior face of the latter is vertically truncate, the brow rounded.

Bulawayo. (G.A. coll.)

P. ERGATANDRIA, Forel, race COGNATA, Santschi.

Forel, Trans. Ent. Soc. London, p. 365, 1893. Santschi, Ann. Soc. Ent. Belg., vol. 56, p. 153, 1912.

♂. 3 mm. Castaneous brown, head darker than the rest of the body, legs, antennae, clypeus, and mandibles brownish yellow. Clothed with a pale pubescence, very short on the head, and with pale pilose hairs on the 3rd-5th abdominal segments. Head very minutely and rather closely punctured, thorax less densely and much more shallowly punctured, a few large punctures on the mandibles, the rest of the body impunctate; the whole body nitidulous. Head, excluding the mandibles, nearly one-quarter longer than wide, sides moderately convex, posterior angles rounded, posterior margin feebly concave. The scape does not reach back to the posterior margin; the flagellum strongly incrassate towards the apex, the last 4 joints forming a club; 1st joint of flagellum as long as the three following joints taken together, 2nd-10th joints wider than long, apical joint as long as wide, and as long as the two preceding joints together. Clypeus not so short as in *Ragusae* or *dulcis*, raised in the centre and impressed transversely above the anterior margin, which is slightly produced. Frontal carinae short and converging posteriorly, separated by a faint impressed line reaching to the middle of the head. Mandibles triangular, shining, with about 6 small unequal-sized teeth on the masticatory margin, the apex ending in a sharp strong tooth. Eyes small, situated within the anterior fourth of the head. Pronotum only a little narrower than the head, one-third wider than long, very convex in front and at the sides. Mesonotum nearly round, as long as the pronotum, and a little wider than long. The profile of the dorsum of the thorax is almost straight, and the thoracic sutures quite distinct. Dorsum of the epinotum as long as the mesonotum, a little wider at the apex than at the base; the declivity is not so oblique as in *Ragusae* or *dulcis*. The node of the petiole is much thicker above than in those species, nearly twice as wide as long, and with the anterior and posterior faces vertical. Seen from above, the margins of the dorsal surface of the node are convex in front, straight behind and feebly convex at the sides. Abdomen elongate, as long as the thorax and petiole together; 1st and 2nd segments subequal, the constriction between them not very marked. Sting exerted.

Found in some numbers round the almost dried bones of a buried snake in which small white Poduridae abounded, and on which the ants were seen to prey.

Bulawayo. (S.A.M., R.M., G.A. colls.)

P. DULCIS, Forel.

Ann. Mus. Nat. Hung., vol. 5, p. 2, ♀, 1907.

♀. 2.7–3 mm. Brownish yellow, mandibles, antennae, and legs ochreous, abdomen yellowish brown. Thorax very shining, abdomen and head moderately so; head, scapes, and first two segments of abdomen microscopically punctured, elsewhere impunctate. A short pale sparse pubescence on the limbs and body, a little denser on the abdomen; the clypeus and apical abdominal segments with a few long pale pilose hairs. Head one-fifth longer than wide, slightly narrower in front than behind, sides convex, posterior margin almost straight, posterior angles rounded but distinct. Eyes small and black, situated within the anterior fifth of the sides of the head. Mandibles shining, triangular and with a few shallow punctures along the masticatory margin, which is feebly denticulate. Frontal carinae short, separated by a shallow impressed line which reaches back a little beyond the middle of the head. Clypeus short and similar to that of *P. Ragusae*. The antennae reach back as far as the brow of the declivity, the scape reaching a little beyond the occipital margin. Scape moderately, flagellum more strongly incrassate towards the apex. First joint of flagellum longer than wide, as long as the three following segments taken together; 2nd–10th joints wider than long, apical joint longer than wide, and a little longer than the two preceding segments together. Thorax narrower than the head. Pronotum a little wider than long, the sides and anterior margin convex, the dorsal surface rather flat. Pro-mesonotal and meso-epinotal sutures sharply defined. Mesonotum half as long as the pronotum, nearly round, and elevated slightly above the level of the latter. Dorsum of epinotum narrow, as long as the pronotum and sloping towards the brow of the declivity; the latter is oblique. Node of petiole squamiform; seen from in front it is semicircular above, and wider above the middle line than below it. The anterior face is almost vertical or with only a slight slope from below backwards, and is also feebly convex from side to side. The posterior face is vertical and concave dorso-ventrally. First segment of abdomen as long as the 2nd, both segments almost as long as wide. Intersegmental constriction feeble.

♀. (Hitherto undescribed.) 3.6 mm. Whole body reddish yellow, mandibles and anterior region of the head castaneous. Eyes black, very large, occupying more than one-quarter of the sides of the head. Pronotum nearly twice as wide as long, and very convex

in front. Mesonotum wider in front than behind, as wide as long, and twice as long as the pronotum. Scutellum ovoid transversely, one-third as long as the mesonotum. Dorsum of epinotum rather short, twice as wide as long, the declivity much less oblique than in the ♂ : seen from in front, the brow of the declivity is feebly but distinctly concave from side to side. The node of the petiole is thinner above than in the ♀. Abdomen elongate, very nearly as long as head and thorax together. Deälated. Other characters as in the ♂.

Under stones, Bulawayo. (S.A.M., G.A. colls.)

P. GLEADOWI, Forel, race *AETHIOPICA*, Forel.

Type: Mem. Acc. Bolog. 5, p. 60, ♀, 1887. Race: Rev. Ent. Caen, vol. 26, p. 132, ♀, 1907.

♀. 2.5 mm. Head, thorax, and legs reddish yellow, the head somewhat redder; abdomen brown-yellow, the 1st and 2nd segments dark brown with the basal margins paler. This species is very similar to *spei*, from which it is clearly distinguished by the following characters.

Head much longer proportionately than in that species, one and a quarter times as long as wide. Eyes very minute; flagellum more incrassate. The clypeus has a bisinuate anterior margin as in *spei*, but is convex from side to side, and rather abruptly raised in the middle so as to form a sub-carinate hump below the frontal carinae. The epinotum is proportionately wider than in *spei*, and the declivity is not sub-margined laterally. The abdomen is impunctate.

Willowmore, Cape Prov. (Brauns.)

(G.A. coll.)

P. COARCTATA, Latreille, race *BOERORUM*, Forel.

Type: Bull. Soc. Philom. Paris, vol. 3, p. 65, ♀ ♀, 1802. Race: Rev. Suisse Zool., vol. 9, p. 339, ♀, 1901.

“ ♀. 2.4-2.8 mm. Yellow, slightly reddish, head more or less dark brown, thorax brownish red or yellow. Legs, mandibles, antennae, and abdomen always paler. Meso-metanotal suture very deep. The scape does not quite reach the occiput. Node of petiole very much as in the type form; the clypeus is shorter and the mandibles longer.

Natal, 1,600 metres above sea-level. (Haviland.)”

I have copied Forel's rather meagre description omitting only

some comparisons made between this race and some extra-ethiopian species.

GENUS PLECTROCTENA, Smith

Cat. Hymen. Brit. Mus., vol. 6, p. 101, 1858.

Characters.

♀. Clypeus very narrow, anterior margin straight, except above the base of the mandibles where it is shallowly emarginate; labrum very large. Mandibles long and narrow, with a deep sulcus from base to apex on the upper inner side; one large tooth below the middle, and a small and very obtuse one between that and the apex; the latter is obtuse. Frontal carinae large, slightly convergent behind, overhanging and apparently fused with the clypeus in front. Antennae incrassate gradually towards the apex. Eyes small, placed far forwards close to the base of the mandibles. Head much wider than the thorax. Thorax large, pro-mesonotal suture wide and deep, meso-epinotal suture slight or obsolete. Declivity of epinotum with the lateral margins raised into strong ridges. Constriction between the 1st and 2nd abdominal segments strong. Node of petiole thick, longer than broad. Inner calcar of middle and hind legs well developed, outer calcar absent.

♀. A winged ♀ is not known in *mandibularis*; in *subterranea*, Arnold, and *minor*, Emery, winged ♀♀ occur which are very similar to the ♀.

♂. Clypeus triangular; frontal carinae well developed but short and considerably raised. Antennae long, reaching back as far as the base of the 2nd abdominal segment; scape less than half the length of the 2nd joint of the flagellum, 1st joint of the latter very short, only one-third the length of the scape. Eyes moderately large, occupying less than half the sides of the head; ocelli not situated on a raised area. Pronotum exposed; Mayrian furrows on the mesonotum strongly marked; scutellum raised, pyramidal and grooved longitudinally. Declivity of epinotum with raised lateral ridges as in the ♀. Node of petiole higher than long. Abdominal constriction distinct. Pygidium bluntly pointed.

↓ P. SUBTERRANEA, n. sp. (Plate III., figs. 23, 23a.)

♀. 7.5 mm. Castaneous red; all the joints of the flagellum, except the apical, reddish brown. Except in size, puncturation, colour, and dimensions of the eyes, this species is very similar to *mandibularis*. Pubescence entirely wanting except on the legs and

flagellum which bear a scanty microscopic pubescence. Pilosity also absent, except on the last two segments of the abdomen, the clypeus, mandibles and margins of the apical abdominal segments, which bear a few long golden hairs. The whole body very shining and polished, finely, evenly and sparsely punctured. The depressed areas behind the antennal sockets finely striate.

The head is parallel-sided, and nearly one-fifth longer than it is wide; in *mandibularis* the head is as long as wide and the sides are slightly convex. The scape of the antennae is only a little longer than half the head; the flagellum is as long as the head, all the joints except the apical wider than long, the apical joint as long as the three preceding together. The eyes are exceedingly small, less than 0.1 mm., slightly sunk below the surface, and composed of about 24 ill-defined facets. They are separated from the anterior margin of the head by a distance less than their own length. Mandibles as in *mandibularis*. Pro-mesonotal suture distinct, mesoepinotal entirely obsolete. Pronotum without a median longitudinal impression. The lateral margins of the declivity of the epinotum are raised into much stronger ridges than in *mandibularis*; the ridges are abruptly truncate above. Seen in profile, the thorax is much flatter dorsally than in *mandibularis*. The node of the petiole is not much narrower in front than behind, and the angular projection of the ventral lamella is truncate at the apex, otherwise like *mandibularis*. The 2nd abdominal segment is less globose, and the legs are stouter and shorter proportionately than in that species. The 1st and 2nd abdominal segments are distinctly longer than wide.

♀, 10 mm. Similar to the ♂ but winged, and with well-developed eyes, 0.3 mm. long, and three small ocelli. The colour of the head and thorax is darker than in the ♂. The mesonotum is a little wider than long, and two and a half times as long as the pronotum. The parapsidal sutures are deep and well defined only on the posterior half of the mesonotum. All the transverse thoracic sutures distinctly defined. The scutellum is half as long as the mesonotum. Dorsum of epinotum as long as the scutellum, with a feeble median impression at the extreme base. The projection of the ventral lamella of the petiole blunt, but not truncate at the apex as in the ♂. Other characters as in the ♂.

The single specimen of this sex was found alive and dehydrated under a stone. Of the ♂ ♀ I have two specimens, one considerably damaged. The latter was taken dead on the rubbish-heap belonging to a nest of *Tetramorium Blochmanni*, Forel, r. *continentis*, Forel, and the other in a similar situation, and also dead, from the nest of

Pachycondyla Krügeri. From the very small size of the eyes in the ♂ sex, I am inclined to think that this ant leads an almost entirely subterranean existence. The presence of the dead ♂ ♀ on the rubbish-heaps of other ants is doubtless due to accidental intrusions into the galleries of the latter.

Bulawayo, 1 ♂, 1 ♀. Shiloh, S. Rhodesia, 1 ♂.
(S.A.M., R.M., G.A. colls.)

P. MANDIBULARIS, Smith.

Cat. Hymen. Brit. Mus., vol. 6, p. 101, ♂ ♂, 1858.

Var. MAJOR, Forel (= ergatoid ♀).

Mittl. Schweiz. Ent. Ges., vol. 9, p. 11, 1894.

♂. 14.5–16.5 mm. Black; flagellum, mandibles, outer angles of frontal carinae and tarsi piceous; apices of all the femora and tibiae castaneous; 2nd–5th abdominal segments at their extreme apical margins pale brown. Legs with a sparse and coarse golden pubescence, antennae with a close and finer pubescence. Anterior margin of clypeus and masticatory margin of mandibles with a few long golden-brown hairs. The margins of the abdominal segments, except the 1st, with a few short golden hairs. The rest of the body without pilosity or pubescence. Head, mandibles, scape and abdomen very shining. Head evenly and sharply punctured, the punctures being larger at the sides. Abdomen sparsely, evenly and finely punctured. Thorax duller than the head or abdomen, more closely and strongly punctured, the space between the punctures very finely striate. Node shining and as coarsely punctured as the thorax. Head, excluding mandibles, almost square, posterior angles rounded, posterior margin arcuately emarginate. The antennae reach back as far as the middle of the epinotum. Pronotum as long as the mesonotum, slightly flattened above, rounded at the sides and in front, with a central longitudinal impression broken in the middle. The scutellar region is slightly indicated by a shallow impression at the sides and behind. Dorsum of epinotum nearly as long as the mesonotum and with a feeble median longitudinal groove; declivity shining and microscopically punctured, the lateral margins raised into somewhat tumid ridges. Node of petiole convex from side to side in front, and above, the sides moderately convex, vertically truncate behind and nearly so in front, posterior angles fairly sharp but slightly rounded. Ventral lamella produced anteriorly into a wide angle.

First abdominal segment campaniform, 2nd segment longer than the 1st. Legs rather slender; anterior tarsi beneath clothed with dense, golden bristles. Sting short and blunt. For the rest, the characters of the genus.

♀. 20 mm. The large form which I regard as an ergatoid ♀, differs from the ♂ chiefly in size, but the head and abdomen are proportionately wider and longer. The longitudinal impression on the pronotum is shallower, while that of the dorsum of the epinotum is deeper and wider.

In a nest of three dozen or so individuals, not more than two or three of these large forms are to be found, and usually only one.

♂. 14.5 mm. Black; 3rd segment of abdomen piceous, last three segments ferruginous. A golden-grey pubescence on the whole body, excepting the last four abdominal segments. The margins of all the abdominal segments except the 1st carry a few golden hairs; elsewhere there is no pilosity. Head moderately shining, closely, finely and shallowly punctured, a little more coarsely in front and at the sides. Pronotum reticulate-punctate, the posterior margin transversely striate. Mesonotum rugosely punctate anteriorly, laterally sparsely and shallowly punctured, the space between the punctures rugulose. Scutellum and metanotum with very large reticulate punctures; epinotum rugose, coarsely at the sides, finely so above. Node of petiole shining above, closely punctured and dull at the sides. Abdomen microscopically rugulose, shallowly and very sparsely punctured, the punctures somewhat larger and more abundant on the 1st and 2nd segments.

Head wider than long, sides convex, occipital margin reflexed and forming a small collar. Clypeus widely emarginate; frontal carinae short, raised above the antennal sockets; frontal sulcus extends back as far as the anterior ocellus. Antennae filiform, reaching back as far as middle of 1st abdominal segment. Mandibles short, edentate and blunt at apex. Prothorax produced neck-like in front. Mesonotum with well-developed Mayrian furrows and an elongate median triangular area in front, which is shining and impunctate. Scutellum pyramidal, with a large longitudinal sulcus, and separated from the mesonotum by a coarsely crenate impression. Metanotum with a short central carina. Declivity of epinotum deeply excavated, transversely rugose; the lateral margins ridged as in the ♀. Node of petiole sub-globose seen from above; seen from the side the dorsal portion is convex, the posterior face vertical, the anterior face almost so; ventral lamella produced at the extreme base into a triangular tooth pointing downwards. Seen from above the

shape of the node is distinctive, the base being emarginate with small lateral angles, behind which on each side lies a flattened projection. The node of the petiole is only half as wide as the 1st abdominal segment. The latter is nearly as long as wide, sub-campaniform, and separated from the 2nd segment by a well-marked constriction. The 2nd segment is two-thirds wider than long, the sides slightly convex. Abdomen as long as thorax and petiole together. Pygidium narrowly truncate. Legs slender. Wings sub-hyaline, somewhat darker towards the apex, stigma brown, nervures pale brown; 2 sub-marginal cells, radial cell lanceolate.

This species is fairly generally distributed. Specimens from Willowmore and Grahamstown are rather small, but otherwise agree with the type. They are intermediate in size and puncturation between the type form and the smallest form which I have received from Durban. The entrances to the nest are generally indicated by large heaps of earth. The chambers are placed deep below the surface, seldom less than 2 feet, and the number of individuals seldom exceeds 50. It is a sluggish and timid ant, the workers foraging singly. The food includes termites, but consists chiefly of millipedes and beetles.

(S.A.M., R.M., and G.A. colls.)

Var. *STRIGOSA*, Emery.

Ann. Soc. Ent. Belg., vol. 43, p. 469, ♀, 1899.

This differs from the type form in having the dorsal surface of the head, thorax and 1st segment of abdomen finely and regularly striate, longitudinally so on the head and thorax, transversely on the petiole, concentrically on the 1st abdominal segment and slightly so on the 2nd. The petiole is a little shorter than in the type form. Natal.

TRIBE LEPTOGENYINI, Forel.

Characters.

♂ and ♀. Mandibles articulated near the anterior angles of the head; abdominal constriction between the 1st and 2nd segments feeble. Claws pectinate.

♂. Claws pectinate.

GENUS LEPTOGENYS, Roger (Forel).

Berlin Ent. Zeitschr., vol. 5, p. 12, 1861 (*s. stricto*); Jahrb. Hamburg Wiss. Anst., vol. 10, p. 6, 1893 (*s. latiore*).

Characters.

♀. Clypeus usually carinate, and produced in the middle anteriorly as a lobe or small platform. Mandibles linear or triangular with the masticatory margin dentate, or narrow and edentate. Antennae generally filiform. Meso-epinotal suture usually distinct.

♀. It is probable that all the ♀ ♀ of this genus are ergatoid.

♂. Claws pectinate, thereby differing from the ♂ ♂ of all other Ponerinae. Scape short. Mensonotum with well-defined Mayrian furrows.

This genus is divided into 4 sub-genera, of which the two following alone are represented in our region.

1. Mandibles very elongate, crossing each other only slightly and enclosing a large space between them and the clypeus; linear and acute, or ending in two small teeth placed close together *Leptogenys*, Roger.
2. Mandibles triangular, dentate, or narrow and with a terminal tooth; in the latter case they are much shorter than in *Leptogenys*, and do not enclose a large space in front of the clypeus *Lobopelta*, Mayr.

SUB-GENUS LEPTOGENYS, Roger.

Berlin Ent. Zeitschr. vol. 5, p. 12, 1861.

Key to the ♀ ♀ of Leptogenys, s. str.

- (2). 1. Body entirely dull, covered with a pruinose pubescence . . *maxillosa*, Smith.
- (1). 2. Body without any pruinose pubescence.
- (8). 3. Whole body shining.
- (7). 4. Node of petiole seen in profile, quadrant-shaped, seen from above much wider behind than in front.
- (6). 5. Head wider at the anterior margin than it is across the eyes. 10-11 mm.
Stuhlmanni, Mayr.
- (5). 6. Head not wider at the anterior margin than it is across the eyes, 9.5 mm.
Schwabi, Forel.
- (4). 7. Node of petiole seen in profile, not quadrant-shaped, seen from above only a little wider behind than in front, 4.7 mm. *Ferrarii*, Forel.
- (3). 8. Body dull, except the posterior portion of the abdomen, 5.5 mm.
cribrata, Emery.

L. MAXILLOSA, Smith. (Plate III., fig. 24.)

Cat. Hymen. Brit. Mus., vol. 6, p. 93, ♀ ♂, 1858.

♀. 6-6.5 mm., excluding the mandibles. Black; antennae, mandibles (except the extreme base which is piceous), femora, tibiae

and apical segment of abdomen reddish brown; the coxae piceous, the tarsi dark red. The whole body covered with an exceedingly fine pruinose pubescence, similar to that of the *Platythyreini*; there are a few long hairs on the clypeus, and the apical segment of the abdomen is densely clothed with moderately long golden hairs. Head, scape of antenna, thorax, femora, tibiae, petiole, 1st and 2nd abdominal segments microscopically rugulose, and excepting the antennae and legs closely punctured with small, shallow punctures; the 3rd and 4th abdominal segments very finely punctured. Head trapezoid, wider in front than behind, posterior margin slightly emarginate, posterior angles very round. The eyes occupy a little more than one-quarter of the sides of the head, and are placed far forwards and separated from the base of the mandibles by less than their own length. Clypeus shining and coarsely punctured, the anterior margin membranous and translucent, with a feebly crenate depression just in front of the membranous area; the median portion very slightly raised, not carinate, projecting backwards between the frontal carinae. The latter are narrow, not divergent behind, separated along their posterior half by a narrow sulcus which is continued back to about the level of the middle of the eyes. Antennae reach back as far as the base of 1st abdominal segment, the scape reaches back as far as the middle of the pronotum. Mandibles very long, linear, acute at the apex, finely striate and shining. Pronotum about as long as wide, rounded in front, sides moderately convex. Pro-mesonotal suture distinct. Mesonotum hardly more than half as wide as the pronotum, and considerably less than half as long. Dorsum of epinotum widening towards the declivity and as long as the pro- and mesonotum together; declivity shallowly excavated, the lateral margins raised. Node of petiole subquadrate, very slightly wider than long, rounded above, vertical in front and behind; ventral lamella bluntly produced at the extreme base. Abdomen elongate, 1st segment as high as, and one-third wider than the node, spinously produced below at the base; 1st and 2nd segments sub-equal, their apical margins narrowly ferruginous.

“ ♂. $2\frac{3}{4}$ lines. Black and slightly shining, finely punctured; eyes and ocelli very large, the latter glassy bright and very prominent; the legs and antennae fusco-ferruginous; the antennae towards their apex, the articulations of the legs, the tarsi and tip of abdomen ferruginous; wings fusco-hyaline; abdomen and node of peduncle as in the female (= worker).”

I have not seen any ♂ ♂ of this species, and have therefore copied Smith's very scanty description. It is not a common species; the

colony is rather large as a rule, comprising as many as four or five dozen individuals.

(S.A.M., R.M., G.A. colls.)

L. CRIBRATA, Emery.

Ann. Soc. Ent. France, vol. 63, p. 20, ♂, 1895.

“ ♂. 5·5 mm. Piceous; clypeus, antennae, legs and apical segment of abdomen rufescent, dull, abdomen posteriorly and below shining, very densely and finely punctulate all over, with a scanty pubescence and fine pilosity; mandibles linear, acuminate; node of petiole thick, convex above, truncate in front and behind.

Vryburg, Bechuanaland.”

“ This species is remarkable chiefly by its sculpture; the whole body is finely and closely punctured, the head being entirely dull; the thorax and abdomen are slightly shining, especially the posterior portion and ventral surface of the latter; the legs and antennae are also punctulate and almost dull. The sides and posterior portion of the head are plentifully punctured, the thorax with larger punctures; the punctures become gradually smaller on the petiole and abdomen, being simply piligerous points on the posterior segments. The head is nearly square or slightly narrower behind than in front, the eyes large, situated in front of the middle of the sides of the head and separated from the base of the mandibles by less than the length of their own diameter. The clypeus is widely lobate, round and with a membranous margin. Mandibles narrow, linear, arcuate near the base, then straight and again curved near the apex, which is acute. Thorax relatively stout, the epinotum as long as the pro- and mesonotum together; the meso-epinotal suture deep; the declivity of the epinotum has the same sculpture as the rest of the thorax, and the lateral margins are raised. Petiole seen from the side, nearly as wide as high, sharply truncate and smooth behind, convex and rugose above and in front; seen from above, hardly wider than long, and slightly narrower in front than behind.”

L. STUHLMANNI, Mayr.

Jahrb. Hamburg Wiss. Anst., vol. 10, 2, p. 6, ♂, 1893. Forel, Rev. Ent., p. 131, ♂, 1908.

“ ♂. 10–10·6 mm. Black or brownish black, the scape brown, the mandibles, flagellum, and apex of abdomen lighter, the legs reddish brown or lighter. The whole body is covered with an erect

pilosity; pubescence wanting except on the flagellum and tarsi. Mandibles nearly smooth, with here and there some indistinct longitudinal striae and pilose punctures, moderately long, narrow, with a distinct and very oblique masticatory margin at the apex, which ends in a curved pointed tooth. When the mandibles are closed there is a large space between them and the clypeus. The head is smooth, with sparse and shallow pilose punctures, somewhat stronger on the sides of the head; the latter is of a reversed trapeze shape, being much wider in front than behind, and also wider there than across the eyes. Clypeus short, sharply carinate, with striae on each side of the carina which extend back a short distance between the antennal sockets and the base of the mandibles; the carina is produced in front to form a short and rather indistinct projection or snout, which is almost wider than long. On each side of the projection the anterior margin of the clypeus is curved slightly S-shaped. The eyes are nearer the base of the mandibles than the posterior angles of the head. The lower margin of the mouth is without a small tooth. All the joints of the flagellum longer than wide, the 2nd joint nearly twice as long as the 1st. The pronotum is more or less coarsely but shallowly strigose, with a few large shallow punctures at the side; the mesonotum, which is similarly sculptured, is as long as wide, fairly round, and slopes backwards in such a way that the pro- and mesonotum together form a curve, moderately bowed from front to back. The thorax is not deeply constricted between the meso- and epinotum. The latter is long, about as long as the pro- and mesonotum together, and its dorsum rises gradually backwards and then falls rather abruptly towards the rounded boundary between it and the declivity; the dorsum is irregularly rugose, the declivity coarsely and transversely striate; the sides of the meso- and epithorax are obliquely striate.

The node of the petiole is finely wrinkled and sparsely punctured; it is longer than wide, much wider and higher behind than in front, the posterior face vertical, flat and transversely striate. The abdomen is almost smooth, barely constricted between the 1st and 2nd segments. Legs long and thin, the claws distinctly pectinate. Quilimane."

Durban.

The male of the type form is not known, but since the male sex usually varies but little in sub-species and varieties, it may be of some assistance to the student to be able to refer to the description by Forel of the race *erythraea*, Emery, which is herewith appended.

"*Stuhlmanni*, race *erythraea*, Emery.

♂. 9.5 mm. Mandibles very wide at the base, attenuating abruptly to the apex, and curved inwardly. Clypeus broad and carinate, with a short and rounded lobe anteriorly. Head one and a half times longer than wide, narrowed behind the eyes and raised collar-like at the articular margin. The pronotum extends considerably in front of the mesonotum (*i.e.*, not depressed below the latter). Mesonotum with two deep convergent furrows; it is feebly convex in front and behind. Seen from the side, the node of the petiole forms almost an equilateral triangle, obtuse and rounded above. Sculpture, pilosity and colour as in the ♀, but the head is smoother and the metanotum (epinotum) more hairy. Wings with a slight rusty tinge. Bourka, South Africa."

I have met with this species only in Natal, where it appears to feed exclusively on woodlice; the entrance to the nest can be plainly distinguished by the accumulation of the remains of their prey, bleached a dead white, scattered around it. The nest is not indicated by any mound or other accumulation of earth; but in the neighbourhood of Durban at least, it is very frequently found in, or immediately adjacent to the nests of *Myrmicaria eumenoides*, Gerst. I am inclined to think that this *Leptogenys* dispossesses the latter species of a part of their large nest, rather than take the trouble of excavating one for itself. It also has a very noticeable smell, resembling essence of pears. (S.A.M., R.M., G.A. colls.)

L. SCHWABI, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 208, ♀, 1913.

♀. 9.6 mm. Very similar to *Stuhlmanni*. Black, mandibles, flagellum, extreme base and apex of scape, the tarsi and apex of abdomen more or less ferruginous, the clypeus, tibiae and femora piceous. Whole body very smooth and shining, sparsely covered with long yellowish or golden hairs, which arise from very small punctures. Puncturation otherwise wanting. Pubescence entirely absent. The mesonotum is transversely and shallowly strigose above, obliquely so at the sides; the epinotum is also transversely strigose above, but more strongly so than the mesonotum, especially over the brow of the declivity. The sides of the epinotum obliquely striated.

Head a little longer than it is wide in front, much wider in front than behind, but at the anterior margin it is not wider than across the eyes. The latter large, situated a little in front of the middle of the sides. Clypeus like that of *Stuhlmanni*, but the apex not pro-

duced so much in the middle. Mandibles long, longer than the head, shining, sparsely punctured, the apical portion a little wider than the rest, and concavely excised so as to form a distinct tooth at the apex. Antennae long, reaching back as far as the base of the 2nd abdominal segment, the scape reaching back as far as the posterior margin of the mesonotum; 2nd joint of the flagellum nearly twice as long as the 1st, all the joints cylindrical and much longer than wide. Thorax similar to that of *Stuhlmanni*, but the pronotum is smooth, and the epinotum more strongly strigose. The rest of the characters similar to those of *Stuhlmanni*. In both these species the node of the petiole seen from the side is approximately quadrant-shaped, the curvature being anterior and dorsal.

Bulawayo.

This species is crepuscular or nocturnal, and preys on termites. I have never seen it about during daylight.

(S.A.M., R.M., G.A. colls.)

L. FERRARI, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 209, ♀, 1913.

♀. 4.7 mm. Brownish black, mandibles, clypeus, antennae, legs and apex of abdomen ochreous red. Very similar to *Lobopelta nitida* and *castanea*, but owing to the structure of the mandibles, this species is a true *Leptogenys*, *s. str.* Legs and body covered with short, yellow, semi-erect hairs, longer on the petiole and abdomen. Smooth and shining. Head very finely and somewhat sparsely punctured. Thorax with large and shallow irregular punctures; at the sides and on the node these punctures are very elongated, almost forming short grooves. The declivity of the epinotum strongly and transversely striate.

Head longer than wide, a little wider in front than behind, the sides and posterior margin moderately convex. Clypeus with a sharp median carina, which, seen from the side, projects at the apex distinctly beyond the level of the mouth. Mandibles smooth, shining, sparsely punctured, shorter than the head, curved feebly from the base to the apex, a little broader near the apex, with a very short but distinct masticatory margin. Eyes moderately large, situated just in front of the middle of the sides of the head. Scape not extending much beyond the occipital margin, about two-thirds as long as the flagellum; 7th-9th joints as wide as long, the rest longer than wide, 1st joint as long as the 2nd.

Pronotum convex in front and above, wider than the rest of the

thorax and wider than long; mesonotum wider than long. Pro-meso, and meso-epinotal sutures well defined; epinotum as long as the pro- and mesonotum together, widening a little towards its apex, convex from side to side above; the declivity rather short, very steep but not vertical. Node of petiole sub-quadrate, a little wider behind than in front, and a little wider behind than it is long, anterior and posterior faces vertical, but the former rounded at the brow; the dorsal profile of the node slopes down from behind to the front. First abdominal segment as long as the 2nd, both segments a little wider than long; intersegmental constriction weak.

Bulawayo. (G.A. coll.)

SUB-GENUS LOBOPELTA, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 733, 1862.

Characters.

♀. Mandibles triangular and dentate, or narrow and with an apical tooth; in the latter case the mandibles are much shorter than in *Leptogenys* and do not enclose a large space in front of the clypeus. Clypeus usually with a pointed or carinate lobe, or with a tooth on each side of the middle.

♀. Ergatoid.

♂. Not distinguishable from that of *Leptogenys*.

Key to the ♂ of Sub-genus Lobopelta.

- (10). 1. Black species.
- (9). 2. Node of petiole as long as, or only slightly longer than wide.
- (4). 3. Impunctate or nearly so; dorsum of epinotum very smooth. *nitida*, Smith.
- (3). 4. Puncturation distinct; dorsum of epinotum more or less strigose.
- (6). 5. Pronotum distinctly punctured *Peringueyi*, Forel.
- (5). 6. Pronotum not punctured, but rugose.
- (8). 7. Node of petiole a little wider than long; 8th-10th joints of flagellum wider than long *Arnoldi*, Forel.
- (7). 8. Node of petiole longer than wide; 8th-10th joints of flagellum longer than wide *Havilandi*, Forel.
- (2). 9. Node of petiole two and one-third times as long as it is wide posteriorly. *attenuata*, Smith.
- (1). 10. Reddish yellow or castaneous species.
- (12). 11. Larger species, 4-4.5 mm.; scape of antenna impunctate. *nitida*, Smith.
- (11). 12. Smaller species, less than 4 mm.; scape of antenna finely but distinctly punctured.
- (14). 13. Head almost quadrate, only slightly longer than wide . . *parva*, Forel.
- (13). 14. Head distinctly longer than wide *castanea*, Mayr.

L. (LOBOPELTA) HAVILANDI, Forel.

Rev. Suisse Zool., vol. 9, p. 332, ♀, 1901.

“ ♀. 6.5 mm. Mandibles narrow, slightly broader towards the apex, the apical margin forming a cutting, edentate edge, concave, curving into the inner margin, smooth and punctured. Head sub-rectangular, hardly longer than wide, wider in front than behind, with posterior margin and angles rounded; the posterior margin is confluent with the straight articular margin. Eyes large and flat and situated a little in front of the middle of the sides. Lobe of clypeus triangular, short, obtuse and rounded at its median point, margined in front along its whole length by a whitish edge. The scape reaches beyond the occiput by about one-quarter of its own length. Thoracic sutures distinct. Dorsum of epinotum as long as the pro- and mesonotum together. A narrow but deep sulcus between the meso- and epinotum. Node of petiole sub-cubic, slightly longer than wide, wider behind, posterior face vertically truncate and at least one and a half times as high as the anterior face, which is also truncate. Abdomen elongate, constriction between 1st and 2nd segments distinct. The 1st segment is not wider, perhaps even narrower than the 2nd. Head densely and strongly punctured, almost dull, except the clypeus which is longitudinally striate. Thorax and node fairly dull, very irregularly and rather coarsely rugose, finely reticulate between the rugosities. Abdomen smooth, with a few coarse irregular punctures, especially on the apical margin of the 1st segment. Legs and scapes finely punctured. Anterior and posterior faces of the node and anterior face of the 1st abdominal segment smooth and shining. Pilosity erect, yellow and fairly dense all over, somewhat oblique, longer on the abdomen, short and scanty on the legs. Pubescence scanty on the body, abundant on the legs. Black; mandibles, antennae, legs and apex of abdomen reddish brown. Natal. (Haviland.)”

L. (LOBOPELTA) PERINGUEYI, Forel.

(*L. Havilandi*, race *Peringueyi*), Deutsch. Ent. Zeitschr. Beiheft, p. 210, ♀, 1913.

Similar in general features to *L. Havilandi*, but smaller and with entirely different sculpturation and differently shaped head and mandibles. Dr. Forel treats it as a race of *Havilandi*, but in view of the marked differences, I have adopted the suggestion made in his description that it should perhaps be treated as a distinct species.

♀. 6 mm. Black, mandibles, legs, flagellum and apex of

abdomen brown, tarsi and joints of legs brownish red. Very sparsely pilose and pubescent, the pilose hairs yellowish and very short. Whole body moderately shining, clearly but not densely punctured, the punctures being sharply defined but not deep; the sides of the meso- and epinotum obliquely punctate-striate.

Head a little longer than wide, as wide behind as in front (in *Havilandi* it is much narrower behind than in front), posterior angles considerably rounded, sides and posterior margin moderately convex. Clypeus strongly carinate in the middle, more so than in *Havilandi*, and more acute at the apex. Mandibles smooth, with a few coarse punctures, widening towards the apex, which has a masticatory margin not so distinct as in *Havilandi*, ending in a small tooth below. The eyes are smaller than in *Havilandi* and are placed within the anterior half of the head. The scape extends back beyond the occipital margin, but is not so long as in *Havilandi*; the 1st joint of the flagellum is very little longer than the 1st or 3rd (nearly twice as long as the 1st in *Havilandi*). The thorax is more constricted in the middle, and the pro- and mesonotum and the dorsum of the epinotum are more convex. The node of the petiole as long as wide behind, more convex above and not so sharply truncate in front and behind, and not quite so long as in *Havilandi*. It is also less sharply margined behind than in that species.

Table Mountain. (Dr. L. Péringuey.) (S.A.M., G.A. colls.)

L. (LOBOPELTA) ATTENUATA, Smith.

Cat. Hymen. Brit. Mus., vol. 6, p. 91, ♀, 1858.

♀. 8 mm. Black; mandibles, scape, apical segment of abdomen and tarsi yellowish brown; flagellum and extreme base of scape dark yellow; apical margins of 1st and 2nd abdominal segments, the whole of the 3rd and 4th segments, all the coxae and the petiole piceous red. The sides of the head and the pleurae have in some lights a bluish reflection. A scanty and short greyish pilosity on the body and legs; flagellum and tarsi pubescent. Impunctate. Head wider in front than behind, longer by nearly one-third than it is wide, sides convex, posterior margin strongly emarginate, posterior angles acute. Clypeus broadly triangular, with a sharp and narrow median carina; anterior margin slightly produced and pointed in the middle, finely and longitudinally striate. Frontal carinae very short and narrow; frontal sulcus narrow, deep, and extending back to about the level of the anterior margin of the eyes. The latter are large, convex, and situated a little in front of the middle of the sides. Antennae long; scape extends beyond the occiput by one-third of

its own length; flagellum filiform, all the joints much longer than wide, 2nd joint two-thirds longer than the 1st. Mandibles shallowly punctured and shining, slightly widening from the middle to the apex, masticatory margin edentate and rather long. Pronotum slightly longer than wide, rounded above, in front and at the sides. Mesonotum rectangular, flat, longer than wide; pro-mesonotal and meso-epinotal sutures distinct. Dorsum of epinotum almost as long as pro- and mesonotum together, very narrow at the base, widening towards the brow of the declivity; the latter is very short and has a small angular projection above on each side. Node of petiole seen from above, two and a third times as long as wide, widest behind and strongly compressed laterally; seen from the side the node is almost triangular, the posterior margin vertically truncate, the dorsal profile from the base to the upper margin of the posterior face convex. The posterior face is smooth and shining. Ventral lamella angularly produced at the extreme base. The constriction between the 1st and 2nd abdominal segments is not deep. First segment campaniform, with a sharp angular projection at its base below, at the junction with the petiole. Fourth and apical segments strongly compressed laterally. Legs long and slender.

Algoa Bay. (Brauns.) Durban.

♂. 7 mm. (hitherto undescribed). Colour and pubescence as in the ♀, with the antennae entirely ferruginous. Whole body shining, head with a few small punctures between the eyes and antennal sockets, prothorax smooth and impunctate, mesonotum with a few large shallow punctures, epinotum transversely striate. Head a little longer than it is wide across the eyes. The latter large, occupying more than half the sides of the head and separated from the base of the mandibles by a distance equal to the length of the 1st joint of the flagellum. Antennae filiform, reaching back as far as the base of the 3rd abdominal segment; scape three and a quarter times as long as the 1st joint, 2nd joint of flagellum one and a half times as long as the scape. Clypeus long, sub-carinate medially, the anterior margin produced into a pronounced beak in the middle. Mandibles ochreous, oblong, rounded at the apex and edentate. Pronotum exposed, quite twice as wide as long; mesonotum a quarter longer than wide, the Mayrian furrows wide and well defined. Epinotum as long as the mesonotum, longer than wide, widest at the base and narrowing towards the apex, and three times as long as the declivity. The latter is oblique, margined above and at the sides, the margins produced at each side above into short blunt angles. Node of the petiole as in the ♀, but a trifle wider at

the base above. The constriction between the 1st and 2nd abdominal segments quite as distinct as in the ♀. Legs long and slender. Wings fuscous, stigma, and nervures yellowish brown.

Durban. (C. B. Cooper.) (S.A.M., R.M., G.A. colls.)

L. (LOBOPELTA) ARNOLDI, Forel. (Plate III., figs. 27, 27a, 28.)

Ann. Soc. Ent. Belg., vol. 57, p. 110, ♀ ♂, 1913.

♀. 6.3 mm. Black; extreme apex of abdomen piceous, mandibles, flagellum, base of scape, basal half of tibiae, and tarsi reddish brown. Head shining, thorax and petiole slightly dull, abdomen very shining and impunctate. Head closely and finely punctured, especially at the sides, very finely striate in front between the clypeus and the eyes. Median dorsal portion of pro- and mesonotum shining and impunctate, the sides of the same, the pleurae, epinotum and the node very finely rugulose and dull. The declivity of the epinotum strongly and transversely rugose. Legs and antennae with an inconspicuous and sparse pubescence. The whole insect covered with long, oblique yellowish hairs, which are denser and longer on the clypeus and abdomen. Head a little longer than wide; including the mandibles, somewhat oval. Clypeus triangular, carinate in the middle, the anterior margin narrowly membranous. Frontal carinae narrow. Mandibles shining and sparsely punctured; they are wider towards the apex than at the base, convex above from base to apex and also on the external margin; the masticatory margin is edentate, joining the inner margin in a gradual curve, the apex acuminate. Eyes large, convex, and situated at the middle of the sides of the head. The antennae reach back as far as the base of the abdomen, the scape is rather flattened dorso-ventrally, the flagellum slightly incrassate towards the apex, 8th to 10th joints wider than long. Thoracic sutures distinct; pronotum as long as wide, mesonotum quadrate, margined all round by a distinct sulcus. Dorsum of epinotum not quite as long as the pro- and mesonotum together, wider at the apex than at the base; declivity rather abrupt, triangular in outline and with strong transverse striae. Node of petiole sub-cubic, very slightly wider than long, rounded above and at the sides, vertically truncate behind and in front, and wider behind than in front. First abdominal segment convex at the sides, shorter than the 2nd segment, the constriction between the two distinct. Apical segment slightly compressed laterally. First segment produced at the base ventrally into a blunt tooth.

♀. Ergatoid (hitherto undescribed). 9 mm. Abdomen, 4 mm. long, 1st segment 1.5 mm. wide. This differs from the ♀ by its

size and the proportionately longer abdomen. It is also a duller insect, which is due to the denser pilosity, especially on the abdomen which has a short pubescence intermixed with the pilosity. The mesonotum is also larger and longer than in the ♀.

♂. 8-8.5 mm. Black; apex and base of scape pale ferruginous, flagellum ochreous, the last five joints fuscous above; tarsi reddish yellow, and all the tibiae and femora ferruginous at the base and apex. Head almost impunctate, anteriorly slightly rugulose. Thorax and petiole very finely rugulose, the epinotum reticulate. Abdomen shining and impunctate. A fine grey pubescence on the whole body, longer and sparser on the abdomen, more abundant on the sides of the thorax, very inconspicuous elsewhere. Head, thorax, and sides of petiole dull, disc of metanotum, apex of node and the whole abdomen shining. Head lozenge-shaped, widest behind the eyes, narrow in front and more so behind. Clypeus gibbous in the middle, anterior margin convex. Frontal carinae obsolete. Mandibles considerably atrophied, represented by a spatulate yellow appendage, hardly larger than one of the ocelli. Eyes large, oval, situated at about the middle of the sides of the head; ocelli well developed, not situated on a raised area. Scape short, not extending beyond the posterior margin of the eyes, widest at the apex, twice as long as wide. First joint of flagellum as wide as long, 2nd joint one and a third times as long as the scape, all the joints flattened dorso-ventrally, especially the last five joints which are spirally curved. Pronotum exposed, the anterior free margin reflexed. Pro-mesonotal suture well defined. Mesonotum rounded at the sides, depressed above, separated from the scutellum by a distinct but narrow sulcus; mesonotum including the scutellum, almost three times as long as the pronotum. Epinotum as long as the mesonotum, the dorsum continuous with the declivity in a gradual curve; the declivity transversely striated. Node of petiole as long as wide, thicker above than below, obtusely and obliquely truncate in front and behind, sides convex. The node is less than half as wide as the 1st abdominal segment. Abdomen elongate, 1st segment convex in front and at the sides, 2nd segment slightly wider than the 1st, and one-third longer. Pygidium rounded at the apex. Abdominal constriction distinct. Wings slightly smoky, nervures fuscous, stigma brown. Legs thin and slender.

I have taken this species on only one occasion. The nest, situated in sandy ground, contained several hundreds of ♀♀ and ♂♂ and one ergatoid ♀.

Plumtree, S. Rhodesia. (S.A.M., R.M., G.A. colls.)

L. (LOBOPELTA) NITIDA, Smith.

Cat. Hymen. Brit. Mus., vol. 6, p. 92, ♂, 1858.

♂. 4-4.3 mm. Ferruginous, the legs and apical margins of the abdominal segments, and the whole of the last three segments lighter; the 2nd abdominal segment and vertex of the head castaneous red; or entirely black with flagellum ferruginous. A scanty pubescence on the legs and antennae; a sparse pilosity on the body and legs, more abundant on the last segment of the abdomen. The whole body very shining and impunctate. Head oblong, about one-quarter longer than wide, sides very slightly convex, posterior margin straight, posterior angles rounded. Clypeus carinate in the middle, the carina ending in a sharp point; produced backwards in an acute angle between the frontal carinae. The latter are very narrow behind the antennal sockets. Mandibles shining and coarsely punctured, slightly wider towards the apex, which ends in a sharp tooth, the masticatory margin concave and moderately large. Eyes small, situated within the anterior third of the head. Scape of antenna extends back as far as the middle of the pronotum, flagellum slightly incrassate towards the apex, 1st and 2nd joints sub-equal, 8th-10th joints as long as wide. Pronotum rounded above, in front and at the sides, convex in profile, twice as long as the mesonotum; pro-mesonotal suture feeble, meso-epinotal well defined. Epinotum as long as pro- and mesonotum together. Dorsum of epinotum flat, narrower at the base, declivity gradual and rather short. Node of petiole higher than the epinotum; seen from above almost triangular, with the anterior face very rounded, the sides very slightly convex; truncated in front and behind, and strongly convex above. Abdomen elongate, 1st and 2nd segments sub-equal, 1st segment rounded at the base, nearly twice as wide as the node of the petiole, the constriction between the 1st and 2nd segments fairly deep. Legs long and slender.

Ladismith, Cape Prov. (light variety). (Brauns.) Estcourt, Natal, (Wroughton.) (S.A.M., R.M., G.A. colls.)

L. (LOBOPELTA) CASTANEA, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 734, ♀, 1862.

♂. 3.6 mm. Very similar to the pale variety of *nitida* in colour and general appearance, but lighter and narrower. It may be distinguished from that species by the following characters.

The scape of the antenna is considerably flattened, and distinctly but finely punctured, and the flagellum is much thicker. The eyes

are proportionately larger. The posterior angles of the head are not so round, thereby making the head look longer and more rectangular than in *nitida*. The 3rd-5th abdominal segments are narrower, being rather strongly compressed laterally.

Algoa Bay. (Brauns.) (S.A.M., G.A. colls.)

L. (LOBOPELTA) PARVA, Forel.

Rev. Suisse Zool., vol. 9, p. 332, ♂ ♂, 1901.

“♀. 3·3-3·4 mm. Related to *castanea*, but the head is square, hardly longer than wide, the scapes not extending beyond the occiput, the flagellum with the 2-10 joints transverse, a little wider than long and the last joint moderately thick and long; the eyes are very small and flat, with a dozen atrophied facets; the node of the petiole is much more squamiform, wider than long. Mandibles narrow, smooth and shining, punctured, nearly as narrow at the apex as at the base, the terminal margin concave. The lobe of the clypeus forms a narrow beak, pointed and sharply carinate. Dorsum of thorax horizontal, without sutures. Declivity of epinotum oblique, but quite distinct from the dorsum. Legs shorter than in *castanea*. Otherwise in colour, sculpture and pilosity resembling *castanea*, which however is much narrower and differently shaped.

“♂. 3·5 mm. Mandibles very short, not reaching together in the middle. Scape hardly shorter than the 2nd joint of the flagellum, the 1st joint of which is globose. Head sub-circular, a little longer than wide. Eyes small. Thorax as wide as the head; mesonotum with two convergent sulci. Wings sub-hyaline, nervures and stigma very distinct. Dark brownish yellow, antennae brown.

Natal. (Haviland.)”

TRIBE ODONTOMACHINI, Mayr.

Characters.

♂ and ♀. The head has an irregular hexagonal outline; this is due to the inflection of the sides, at about the level of the eyes, so as to form two oblique minor sides anteriorly. Mandibles inserted near the middle of the anterior margin of the head, parallel, pointing forwards and furnished with two or three teeth. When quite open, the mandibles lie parallel with the anterior margin of the head, and can be shut by an instantaneous movement which in some species is done with such force as to produce a very distinct clicking noise.

Owing to the insertion of the mandibles being so closely approximated, the clypeus which lies between their bases and the frontal carinae is very narrow and short. Abdominal constriction absent in *Odontomachus*, and in some species of *Anochetus*. Claws simple.

♂. Abdomen similar to that of the ♀, but in *Odontomachus* there is a slight constriction. Claws simple, hardly dentate.

✓
Key to the Genera of Odontomachini.

1. ♀ and ♀. Antennal hollows confluent posteriorly: ♂ pygidium spined.
Odontomachus, Latreille.
2. ♀ and ♀. Antennal hollows not confluent posteriorly; ♂ pygidium not spined.
Anochetus, Mayr.

GENUS ANOCHETUS, Mayr.

Europ. Formiciden, p. 53, 1861.

Characters.

♀. Antennal hollows not confluent; no large depressions on the sides of the head. The shape of the mandibles is very variable. Node of petiole squamiform, or bidentate and nodose, conical or terminating in a spine.

♀. Similar to the ♀, winged, in some species ergatoid.

♂. Mandibles and antennae as in *Odontomachus*; node of petiole more or less pointed or emarginate. Abdominal constriction absent. Pygidium not spined.

✓
Key to the ♀ ♀ of Anochetus.

- (6). 1. Node of petiole squamiform or nearly so, almost linear dorsally.
- (3). 2. Pro- and mesonotum strongly rugose *Bequaerti*, Forel.
- (2). 3. Pro- and mesonotum not rugose.
- (5). 4. Pro- and mesonotum strongly punctured; dorsum of node, seen from in front, very convex from side to side *talpa*, Forel.
- (4). 5. Pro- and mesonotum very feebly and sparsely punctured; dorsum of node almost horizontal *punctaticeps*, Mayr.
- (1). 6. Node of petiole thick, dorsal surface not linear . . . *Levaillanti*, Emery.

A. BEQUARTI, Forel.

Rev. Zool. Africaine, vol. 2, p. 309, ♀, 1913.

♀. 5·3-5·5 mm. Head dark ochreous red, thorax brownish black, abdomen black, legs and antennae dirty yellow. A very fine and scanty pubescence on the head, antennae, and legs. Body, but not the legs, with scattered yellowish hairs, longer and stouter on the abdomen. Head sub-opaque, densely and finely striated from

end to end, except the occipital surface, the cheeks and antennal hollows which are smooth and shining. Thorax dull, closely reticulate-punctate, intermixed with some larger rugae, which are more or less longitudinal on the pronotum, and transverse on the mesonotum; abdomen and petiole smooth and shining, legs finely and closely punctured. Head a trifle longer than wide, widest across the eyes, widely excised behind, occipital portion not contracted; the sides in front of and behind the eyes moderately concave. The antennal hollows are wide and bounded anteriorly and externally by a broad rounded ridge. Clypeus smooth and shining, extending back between the frontal carinae in a narrow elongate triangle; anteriorly the clypeus is bilobed and concave dorso-ventrally. Mandibles a little more than half as long as the head, internal margins unarmed, ending in three teeth, the sub-apical shortest and arising from the apical. Eyes large. The scape is widest near the middle, and extends back a little beyond the occipital margin; the flagellum moderately thickened towards the apex. The pronotum is as long as wide, widest in the middle and twice as wide behind as in front. Mesonotum short, wider than long. Pro-meso- and meso-metanotal sutures well defined. Epinotum as long as pro- and mesonotum together, with two distinct broad teeth at the apex of the dorsum; declivity vertical, convex and more finely sculptured than the dorsum. The node of the petiole is squamiform, higher than wide, vertical behind and in front; ventral lamella produced into a large oblong piece pointing forwards. The upper surface of the node is almost linear and slightly excised in the middle (this can be seen more clearly if it is viewed from the front). First and 2nd segments of the abdomen sub-equal, with no distinct constriction between them.

♀ (hitherto undescribed). 6 mm. Very similar to the worker, except the usual sexual differences. The pronotum is wider than in the ♂ and wider than long; the mesonotum is nearly as long as the pronotum, wider than long, finely and longitudinally striate; the scutellum is small. Dorsum of epinotum shorter than in the ♂. Wings pale brownish yellow, stigma and nervures pale brown. Other characters as in the ♂.

♂ (hitherto undescribed). 6.5 mm. Moderately shining. Pale brownish yellow, head dark brown, scutellum and base of epinotum pale brown, mesonotum with a Y-shaped brownish area. Covered with a rather dense pilosity, composed of short stiff dark hairs on the mesonotum, of longer and paler hairs elsewhere. Legs and antennae clothed with a dense pubescence, somewhat erect on the

antennae. Head and thorax shallowly and irregularly rugoso-punctate, epinotum shallowly and transversely striate, abdomen with very minute piligerous punctures. Head much wider than long. Eyes very large, occupying three-quarters of the sides of the head, ocelli large and situated on a raised area. Clypeus flat at the sides, convex in the middle, anterior margin feebly convex. Mandibles small and atrophied. Scape short, twice as long as the 1st joint of the flagellum, half as long as the 2nd, flagellum filiform. The antennae are long, reaching back almost to the apex of the abdomen. Pronotum covered by the mesonotum. The latter is very convex from front to back, and as long as wide; Mayrian furrows and parapsidal sutures moderately clear. The scutellum small and not much raised. Epinotum and petiole similar to that of the ♀, but the teeth of the epinotum less pronounced. Abdomen elongate, 1st segment longer than the 2nd; pygidium sub-acute, not spined; cerci present. Legs long and slender. Wings larger than in the ♀ and of a lighter colour. The projection of the ventral lamella is triangular.

Bulawayo. (S.A.M., R.M., G.A. colls.)

A. PUNCTATICEPS, Mayr. (Plate III., fig. 26).

Annalen K.K.N.H. Museums, Wien, vol. 16, p. 4, ♂, 1901.

“ ♂. 3·7–3·8 mm. Moderately shining, more or less reddish yellow. A long erect and sparse pilosity on the abdomen; the moderately short pubescence is somewhat erect, thickest on the antennae and legs, less abundant on the mandibles, head, and abdomen, scanty on the thorax. The mandibles are about half as long as the head, with piligerous punctures, narrower at the base than at the apex, the lower inner margin (*i.e.* when the mandibles are directed forwards), is feebly and finely denticulate; the angle corresponding to the anterior end of the upper and lower inner margins, is strongly rounded off; the apex of the mandible ends in two medium-sized teeth, directed inwards, the lower one bearing a smaller tooth at its base; the outer margin of the mandibles between the 1st and 2nd fourths of its whole length, is distinctly although feebly concave, beyond that the margin is slightly convex. The head is shaped like that of *Ghilianii*, Spin., but the posterior margin is less emarginate; it is fairly abundantly punctured with rather smooth shining interspaces; from each puncture proceeds a short hair; the sides of the head behind the eyes, are very smooth, very shining and sparsely punctured. The smooth triangular clypeus is wider than

long and is raised over the base of each mandible into a small hump, between these humps it is not emarginate. The scape reaches back nearly to the occiput, the 2nd-7th joints of the flagellum as long as, or hardly so long as broad. The antennal hollows are fairly deep, moderately wide and as long as wide; they are not limited externally by the eyes, since their external margin is separated from them by a distance almost equal to the diameter of the eye itself. The eyes are small. The continuation of the antennal hollows becomes indistinct on the vertex before reaching the narrowed portion of the head. . . . The thorax is smooth, with a few piligerous punctures. The mesonotum is wider than long. The epinotum has two small, broad, and very obtuse teeth; the transversely convex dorsum is evenly merged into the sides, as is also the smooth and very shining, steep declivity. Both the transverse suture of the thorax are distinct. The node of the petiole is higher than broad, rounded above. Abdominal constriction moderate.

Port Elizabeth. (Brauns.) "

A. TALPA, Forel.

Rev. Suisse Zool., vol. 9, p. 351, ♀, 1901.

"♀. 3.5-3.9 mm. Closely related to *myops*, Emery, from which it differs by its less shortened head and by its longer and thinner mandibles. The very small eyes have only 4 or 5 facets. The mandibles, as long as half the head, have the internal margin simple, ending in an obtuse angle, and with 3 teeth at the apex, the median tooth springing from the lower one. The head is a little longer than wide, moderately excavated posteriorly, slightly depressed, and without a fronto-occipital groove, and with the posterior lateral fossettes very feeble and shallow. Clypeus emarginate and bilobed. Frontal sinus very short. The scapes almost reach back to the occiput. Mesonotum transverse; the two thoracic sutures strongly impressed; dorsum of thorax barely convex. Dorsum of epinotum longer than the declivity; the latter with two large obtuse teeth or tubercles above. Node of petiole fairly high, narrow and rounded above. Abdomen truncate and projecting slightly forwards in front. Abdominal constriction feeble. Head smooth, shining and evenly punctured with strong and numerous punctures. There are some very short striae on the frontal carinae. Dorsum of epinotum reticulate and sub-opaque. All the rest shining, sparsely and finely punctured. Erect pilosity almost wanting, except at the apex of the abdomen. Pubescence very distinct, fairly long, yellow,

sparse, and covering the whole body, but very scanty on the vertex and front of the head. Slightly reddish, yellow. Natal. (Haviland.)”

A. LEVAILLANTI, Emery. (Plate III., figs. 25, 25a, 25b.)

Ann. Soc. Ent. France, vol. 63, p. 21, ♀, 1895.

♀. 5.2–6 mm., excluding the mandibles. Head, antennae, mandibles, thorax, petiole and legs a rich dark red; 1st abdominal segment castaneous red, the rest piceous or black. Whole body, antennae and legs covered with a fine and rather long pubescence, evenly distributed but not dense, a few long hairs on the apex of abdomen. Head and thorax finely striate. On the head the striae radiate from the frontal carinae diagonally to the sides. The striae on the pronotum are longitudinal, on the mesonotum and epinotum transverse; the striae on the latter are less regular. The 1st abdominal segment is very shallowly and evenly punctured, the interspaces microscopically rugulose. The 2nd segment with very shallow punctures. Second–5th abdominal segments slightly shining, the rest of the body dull. Head deeply emarginate posteriorly, the portion in front of the eyes about three-quarters as long as the region behind. Posterior angles of the head very round. Between the posterior angles and the eyes, the sides of the head are slightly concave, very convex round the eyes, and moderately so between the eyes and the base of the mandibles. The sides of the head are hollowed out between the posterior angles and the eyes; the antennal hollows are rather wide, smooth and shining. Clypeus produced triangularly backwards between the frontal carinae, and raised into a little hump above the base of each mandible. The sides of the head between the eyes and the mandibles smooth, shining, slightly and obliquely excavated. Mandibles two-thirds as long as the head, widening towards the apex; the latter is incurved at right angles to the basal portion and bifid, forming two sharp teeth, the lower one with a smaller tooth at its base. The inner margin of the mandible is very finely denticulate, a deep notch separating it from the incurved apical portion. Eyes rather large, margined all round by a shining, narrow groove. Scape of antenna reaches back to the occiput, flagellum filiform, slightly incrassate towards the apex, all the joints longer than wide. Pronotum much narrower than the head, a little wider than long, rounded at the sides and above. Pro-mesonotal suture distinct, meso-epinotal nearly obsolete above. Epinotum shorter than the pro- and mesonotum together. Dorsum of epinotum wider at the apex than at the base; the declivity is

almost vertical, transversely striated, and has the lateral margins raised. The node of the petiole is higher than the epinotum, vertical in front and behind, rounded above, the sides convex. Seen from above, it is a little wider than long, concave, and angulate on each side of the base. The ventral lamella is produced into a large truncated projection pointing forwards. First abdominal segment campaniform, as long as the 2nd segment, the constriction between them strong. The dorsum of the epinotum at the apex is more or less impressed in the middle, and the apex of the declivity has an obtuse median carina.

♀ 6·7 mm., excluding the mandibles. Similar to the ♂, but larger and winged. The head is less deeply emarginate posteriorly; the meso- and metanotum longitudinally striate; the mesonotum is widest in front, wider than long, and as long as the pronotum. Dorsum of epinotum short, not longer than the pronotum. The abdominal segments are wider than in the ♂. For the rest, as in the ♂.

S. Rhodesia. (S.A.M., R.M., G.A. colls.)

GENUS ODONTOMACHUS, Latreille.

Hist. Nat. Crust. Insect., vol. 13, p. 257, 1805.

Characters.

♂. Antennal hollows confluent behind the frontal carinae, and separated by two raised, rounded ridges from the deep and oblique post-ocular hollows. The upper tooth of the mandible is generally blunt, the apical and sub-apical usually acute. The internal margin of the mandible more or less strongly denticulate. Node of petiole spined above, the spine pointing backwards.

♀. Winged, with larger eyes, and with ocelli.

♂. Mandibles very small. Antennae very long, scape very short; Its joint of flagellum wider than long. Node of petiole pointed above but not spined. Abdominal constriction moderately distinct. Pygidium spined.

O. HAEMATODA, Linn.

Syst. Nat. (Ed. 10), vol. 1, p. 582, ♀, 1758.

De Geer (*Formica maxillosa*), Mem. Hist. Ins., vol. 3, p. 601, ♀, 1773. F. Smith, Cat. Hymen. Brit. Mus., vol. 6, p. 76, ♂, 1858.?

♂. 9·5 mm., excluding the mandibles. Head and mandibles dark castaneous brown, thorax and petiole more or less castaneous,

abdomen black, legs and antennae brown, the tarsi and articulations lighter. Head, antennae and legs with a very fine, dense silky pubescence; on the thorax the pubescence is much sparser, and on the abdomen it is longer but very scanty. Pilosity slight; a few long hairs on the pronotum, the lower surface of the mandibles and the apex of abdomen. The head is very evenly and finely striate, the striae diagonal. The pronotum has stronger and concentric striae; the mesonotum is transversely, and the epinotum semicircularly striate, the striae being stronger on the epinotum than on the thorax. Mesopleurae smooth. Abdomen smooth and shining. The anterior portion of the head in front of the eyes is much less than half as long as the portion behind the eyes. Posterior margin of the head very slightly emarginate. Between the postocular hollow and the posterior angle of the head, there is a shallow and ovoid depression. The antennal hollows are wide, deep, smooth and shining in front of the eyes, dull and shallow behind them. A deep furrow reaches from the occiput to the confluence of the antennal hollows. Clypeus narrow, raised on each side above the base of the mandibles. The latter are half as long as the head, shining and shallowly punctured, with the teeth all blunt, and the inner margin feebly serrated. Scape and flagellum very slender and filiform. The thorax is much narrower than the head. Pronotum narrowed in front, convex above and at the sides, and wider than long; anterior half of mesonotum slightly raised and submarginate. Epinotum about as long as pro- and mesonotum together. The declivity is very steep, but rounded above and merges gradually into the dorsum. Abdomen pyriform; 1st segment twice as long as the 2nd. Legs slender.

♀. 10·5 mm., excluding the mandibles. Similar to the ♂, but winged. The pronotum is shorter than the mesonotum, which is longitudinally striate. The abdomen is wider than in the ♂. Wings brownish yellow, nervures and stigma pale brown.

“ ♂. 6·7–7 mm., the characters of the genus. Tegulae raised, thick at the base, acuminate at the apex. Moderately thickly pubescent. Clypeus smooth and shining. The other parts of the head, and also the thorax unevenly wrinkled. The pilosity similar to that of the ♀. Petiole and abdomen shining, and very feebly sculptured. Colour totally yellowish brown, somewhat testaceous; legs and antennae a little lighter colour.”

Bulawayo. S. Rhodesia. (R.M., S.A.M., G.A. colls.)

SUB-FAMILY DORYLINAE.

The members of this sub-family are commonly known as Driver or Legionary Ants. The males, which are winged and provided with eyes, are frequently taken at lights; on the other hand, the workers are blind, with the exception of some species of *Eciton*, in which there is a pair of single-faceted eyes, and the females (excepting one species of *Eciton*) are both blind and wingless. The members of the genus *Dorylus* are almost entirely subterranean in their mode of life, rarely coming to the surface except in dull, cloudy weather. The species of the sub-genus *Anomma*, which live in the more tropical and forested regions of Africa, and to which the term Driver Ants was originally applied, and the *Ecitini* of South America, are, however, usually seen above the surface, although, should the rays of the sun prove too powerful, they will construct temporarily tunnels with particles of earth held together by their saliva. The species of *Aenictus* are not so shy of the light, and may be seen foraging about even in bright sunlight.

It is probable that all, or at least the majority, of the species are carnivorous, although *D. orientalis* has been shown by Green to feed also on tubers and the bark of trees. Hitherto, as far as I am aware, none of these ants has been known to tend other insects, such as Aphids, Coccids, and Membracids, for the sake of their sweet secretions; but Mr. R. Jack, Government Entomologist for S. Rhodesia, has recently informed me that a species of *Dorylus* (of which he kindly sent me examples, = *D. fulvus*, race *rhodesiae*, Forel) was found by him in large numbers, and apparently tending Membracid larvae which were feeding on the roots of maize.

As far as is known, the members of this sub-family do not as a rule make permanent nests. This course is determined by their exceedingly predatory habits, which compel the adoption of a migratory form of life together with the formation of temporary nests in localities which are sufficiently productive of animal life to detain them for any length of time. Ranging far and wide in search of prey, which consists of any animal they are strong enough to overpower, these ants must sooner or later exhaust the areas round their nests, and are forced to remove the latter to new and more productive hunting-grounds. Space does not permit of a lengthy description of the migrations and other habits of the *Dorylinae* in this paper, and the reader should consult the writings of Bates, Belt, Smeathman, and others who have dealt with the subject in some detail.

Some very remarkable myremecophilous insects have been found

marching with the migratory columns of the Driver Ants,* but as far as I am aware, the queens of the ants themselves have never been so found, although the males have been obtained occasionally under such circumstances.

The three castes in this sub-family are so entirely different from one another, that they were for a very long time classed under different genera, and even under different families. The queens are, moreover, excessively rare and known only in a few species, and the males have been taken but rarely in company with their workers, so that the resulting confusion in the classification of the group has been and continues to be very great.

There is a great general similarity amongst the workers of the genus *Dorylus*, which becomes even closer within the limits of each sub-genus. In the male sex, for lack of more patent distinctions, the chief diagnostic characters are based on the structure of the genitalia; but even there a beginner may very well have difficulties in appreciating the subtle distinctions which separate the different species. In fresh specimens the genitalia can be extracted very easily, by squeezing the abdomen near the apex until they are slightly extruded, when, with a pair of forceps, they may be more fully drawn out.

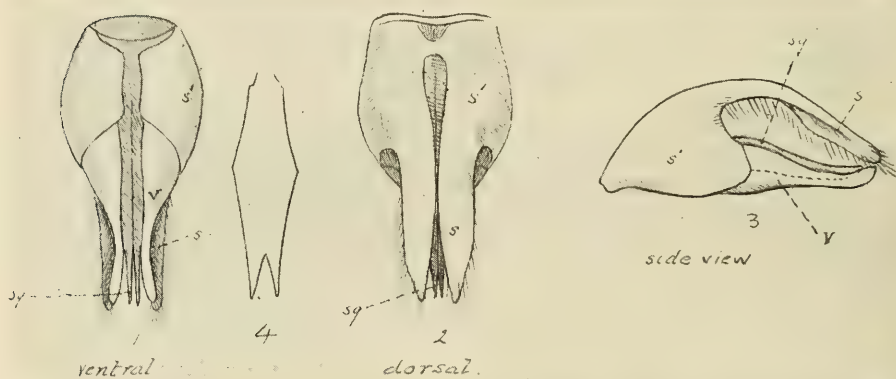
The queens of the *Doryli* are excessively rare, having been described for only seven out of thirty-two known species. It is probable that the total number of specimens of that sex in collections barely exceeds a dozen. Unless the collector is so fortunate as to discover the site of a nest of these insects he is hardly likely ever to see a female specimen alive. Dr. Péringuey informs me that one of the two females of *Dorylus helvulus* in the collections of the South African Museum was obtained by him by placing a raw leg of mutton in a manure heap in which he had previously noticed numerous workers of the species (probably searching for the beetle larvae in the heap). On examining the meat a little later the queen, together with many workers, was found in it.

The female of *Rhogmus fimbriatus* in the collection of Dr. H. Brauns, of Willowmore, Cape Province, was found by Mr. G. A. K. Marshall at Salisbury, S. Rhodesia. Mr. Marshall had his attention drawn to a hole out of which numerous males of the ant had been seen to emerge, and by digging carefully and by following the track of the larger tunnels over a considerable distance he was

* See "Ants and their Guests," by Father P. Wasmann, S.J., translated and published in the Smithsonian Report, 1912, p. 455.

rewarded by finding the nest, which contained the queen and many males, workers and worker-larvae.

The males doubtless find their way to the females by means of their olfactory senses, and possibly the workers make wide tunnels opening to the exterior at certain seasons so as to enable the males from other colonies to obtain access more easily to the virgin queens hidden under the soil. Yet one must suppose, to judge by the very large numbers of males which are produced, that the object of cross-fertilization is not easily accomplished.

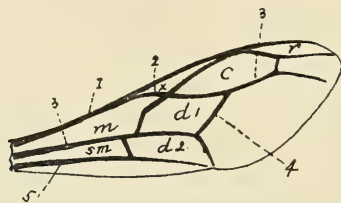


GENITAL ARMATURE OF *Dorylus fulvus*, RACE *badius*.

Outer paramera { s' basal portion of stipes.
 s stipes.
 v volsella.

Inner paramera or sagittae = sg .

Fig. 4: subgenital plate; this, when extended, lies in a ventral position to the genital armature.



ANTERIOR WING OF *Dorylus fulvus*, RACE *badius*.

Cells: r =radial, c =cubital or submarginal, d^1 =discoidal, d^2 =2nd discoidal, m =median or upper basal, sm =submedian or lower basal, x =costal.

Nervures: 1=costal, 2=subcostal, 3=cubital or median, 4=recurrent, 5=anal.

Key to the Tribes of the Dorylinae.

- A. ♀ 2. Pygidium tridentate, with a median impression; maxillary and labial palpi 2-jointed; cheeks without a longitudinal carina; 1st abdominal segment not separated from the 2nd by a constriction.
 ♀. Cloaca open, leaving the sting uncovered; hypopygium forked and extending considerably beyond the pygidium; thorax unsegmented.
 ♂. Stigma of anterior wing very elongate and narrow; radial cell open and elongate, one closed cubital cell; genital armature retractile. . . *Dorylini*, Forel.
- B. ♀ 2. Pygidium simple; maxillary palpi 2- or 3-jointed, labial palpi 2-jointed; cheeks longitudinally carinate; a constriction usually separates the 1st and 2nd abdominal segments, almost making the petiole 2-jointed.
 ♀. Cloaca covered by the pygidium; hypopygium not considerably extended.
 ♂. Stigma of wing very narrow; radial cell elongate, one or two closed cubital cells; genital armature retractile *Ecitini*, Forel.
- C. ♀. Pygidium simple; maxillary and labial palpi 1-jointed; cheeks not carinate; petiole 2-jointed.
 ♀. Cloaca open, leaving the sting uncovered; hypopygium lobed and extending beyond the pygidium; thorax with a suture behind the anterior pair of legs, which is effaced on the dorsum.
 ♂. Anterior wings without stigma or nervures. Genital armature extended, not retractile *Leptanillini*, Emery.

The *Dorylini* is the only tribe represented in South Africa; it is totally absent from America. The *Ecitini*, excepting *Aenictus* and *Aenictogeton*, are confined to America, chiefly South America; and the *Leptanillini* have so far been found only in North Africa, Singapore, Corsica, and Sardinia. The Tribe *Dorylini* comprises a single genus *Dorylus*, Fabr., and is divided into six sub-genera.

GENUS DORYLUS, Fabr.

Ent. Syst., vol. 2, p. 194, 1793.

Characters.

♂ 2. Owing to the extreme polymorphism exhibited in this genus no distinct line of demarcation can be drawn between the ♂ and the 2. The ♂ occurs in all sizes, the largest being regarded as 2. Three chief types may, however, be distinguished, but connected by intermediate forms. (In the descriptions of the species only these three chief types will be dealt with *in extenso*.)

1. Very large individuals or soldiers.

In these the head is enormous, and wider or not less wide in front than behind; the mandibles have fewer teeth than in the ♂; the clypeus is not very protuberant; the antennal joints are of the normal number, 9 to 12 according to the species.

2. Medium-sized individuals or large workers.

Head smaller, but not narrower in front than behind; clypeus more protuberant; antennal joints of the normal number.

3. Very small or pigmy workers.

Head narrower in front than behind; clypeus strongly protuberant; antennal joints reduced in number, but not less than 7.

All three forms are totally devoid of eyes. The frontal carinae are near together and vertical; pro-mesontal suture distinct, mesoepinotal obsolete. Epinotum without spines. Petiole nodiform. Pygidium impressed and ending in three points. Posterior tibiae with a pectinate calcar.

♀. Apterous; without eyes or ocelli. Head with the occipital portion gibbous and divided by a median groove. Clypeus as in the ♀. Frontal carinae not close together. Mandibles narrow and edentate. Antennae with 11 joints, or 12 in sub-genus *Dichthadia*. Thorax segmented, mesonotum not differentiated into scutum and scutellum. Petiole broad, its posterior angles more or less produced into blunt points. First abdominal segment shorter than the 2nd. Cloaca open; the hypopygium extends beyond the pygidium.

♂. Antennae 13-jointed, scape one-quarter or one-third as long as the flagellum. Mandibles edentate; clypeus short and prolonged between the frontal carinae, which are short and divergent. The scutum of the mesonotum overhangs the pronotum. All the femora flattened, the tibiae short. Eyes and ocelli very large.

Petiole nodiform or saucer-shaped, the concavity directed behind.

Genital armature totally retractile; lacinia absent, sub-genital plate deeply cleft.

The *Dorylini* are found in Africa, Asia, and the Malay Archipelago. They do not occur in Madagascar.

Key to the Sub-Genera.

♂ ♀ or ♀♀.

(2). 1. Antennae 12-jointed in the ♀, and in the large and medium-sized ♀.

Dichthadia, Gerst.

(1). 2. Antennae with less than 12 joints.

(10). 3. Antennae 10- or 11-jointed.

(7). 4. Pygidium with a semi-circular impression, the margins of which are sharp (see Plate IV., fig. 38a). Antennae 11-jointed.

(0). 5. Antennae short and thick, all the joints of the flagellum except the last, much wider than long *Dorylus*, Fabr. (s. str.)

(5). 6. Antennae elongate, at least some of the joints of the flagellum longer than wide *Anomma*, Shuckard.

(4). 7. The impressed area of the pygidium without sharp margins (see Plate IV., fig. 31a).

(9). 8. Sub-apical tooth of mandible simple; antennae 11-jointed. ♀ max. 13 mm. long *Typhlopone*, Westwood.

- (8). 9. Sub-apical tooth of mandibles double, or truncate. ♀ max. 8 mm. long.
Rhogmus, Shuckard.
 (3). 10. Antennae 9-jointed *Alaopone*, Emery.

♀ ♀.

- (2). 1. Antennae 12-jointed *Dichthadia*, Gerst.
 (1). 2. Antennae 11-jointed.
 (4). 3. Hypopygium in the form of a cleft plate, narrowed behind.
Dorylus, *Anomma*, and *Rhogmus*.
 (3). 4. Hypopygium wide, forming two lobes, divergent behind.
Alaopone, Emery.

♂ ♂.

- (2). 1. Mandibles wide at the base and prolonged into a point, with the inner margin deeply excised *Dichthadia*, Gerst.
 (1). 2. Mandibles otherwise formed.
 (6). 3. Petiole wider than long, the posterior face concavely excavated.
 (5). 4. Mandibles less than 4 times as long as wide *Dorylus*, Fabr.
 (4). 5. Mandibles more than 4 times as long as wide *Anomma*, Shuckard.
 (3). 6. Petiole nearly square, or round.
 (8). 7. Mandibles about three times longer than wide *Typhlopone*, Westw.
 (7). 8. Mandibles much shorter.
 (10). 9. Wings with a 2nd recurrent nervure *Rhogmus*, Shuckard.
 (6). 10. Wings without a 2nd recurrent nervure *Alaopone*, Emery.

The sub-genus *Dichthadia* is confined to Burma and the Malay Archipelago. *Dorylus*, *Anomma*, and *Rhogmus* are entirely African; *Alaopone* and *Typhlopone* are almost entirely confined to Africa, but have one species each in the Asiatic region.

In the South African region, *Anomma* is apparently absent, although it might be expected to occur on the East Coast from Beira to Delagoa Bay.

SUB-GENUS DORYLUS, Fabr. (*sensu stricto*).

Ent. Syst., vol. 2, p. 194, 1793. Emery, Zool. Jahrb. Syst., vol. 8, p. 701, 1895.

Key to the ♀ ♀ and ♂ ♂ of the Sub-Genus Dorylus.

- (2). 1. Sides of the head distinctly convergent posteriorly; puncturation of the vertex of the head rather sparse and shallow, the sides of the head in the smallest ♀ quite smooth *braunsi*, Emery.
 (1). 2. Sides of the head not distinctly convergent posteriorly.
 (4). 3. Sides of the head almost parallel in the ♂; puncturation of the vertex stronger and more abundant *helvolus*, Linn.
 (3). 4. Sides of the head less parallel in the ♂, the head being slightly narrower behind than in front; puncturation of the vertex sparser and feebler.
 (6). 5. Petiole not much wider behind than in front; maximum length 11 mm.
affinis, Shuckard.
 (5). 6. Petiole wider posteriorly; maximum length 8·5 mm. *brevipennis*, Emery.
 ♀ unknown *furcatus*, Gerst.

Key to the ♂♂ of the Sub-Genus *Dorylus*.

- (4). 1. Scape about as long as the first 6 or 7 joints of the flagellum, and shorter than half the flagellum.
- (3). 2. Mesonotum wider (5 mm.); lateral margins of the stipites, seen from above, sinuate, narrowed at about the middle *helvolus*, Linn.
- (2). 3. Mesonotum narrower (4 mm.); lateral margins of the stipites not sinuate, but forming an even convexity from base to apex *affinis*, Shuckard.
- (1). 4. Scape shorter than the first 5 joints of the flagellum; mandibles decidedly small *brevipennis*, Emery.
 ♂ unknown *furcatus*, Gerst.
 ♂ unknown *braunsi*, Emery.

D. *HELVOLUS*, Linn. (Plate IV., figs. 33, 33a, 33b, 34, 34a).

Mus. Ludov. Ulrich., p. 412, ♂ 1764. Syst. Nat. ed. 12, vol. 1, 968 (*Mutilla*) ♀, 1767. Emery, Bull. Soc. Ent. Ital., vol. 19, p. 350, ♂ ♀ ♂, 1887. Trimen, Proc. Ent. Soc., London, p. 24, ♀, 1880.

♂ or ♀ maxima. 8 mm. Castaneous, mandibles and anterior portion of head and apical segments of abdomen, darker. Legs very scantily pubescent, flagellum moderately pubescent, a few long hairs on the petiole and abdominal segments. Whole body, except the posterior face of the node and the flagellum, very shining, evenly and distinctly punctured. The punctures are larger and deeper on the head and thorax, shallower and smaller on the petiole and abdomen. The petiole is reticulate-punctate on its posterior face; from each puncture arises a pale, microscopic hair.

Head at least one-quarter longer than it is wide, parallel-sided, posterior angles rounded but very prominent, owing to the deep and almost angular occipital emargination. Mandibles scarcely longer than half the width of the head, very blunt at the apex, and with a blunt tooth near the middle of the internal margin. Clypeus almost linear, except in the middle, where it is slightly and triangularly extended between the frontal carinae, and produced into a small platform on the anterior margin. The frontal carinae short and narrow, free and raised at the sides into a lobe which ends posteriorly in a sharp spine. Scape of antenna incrassate and flattened towards the apex, about two-thirds as long as the flagellum; the latter 10-jointed, all the joints except the last wider than long. The scape and flagellum together are about three-quarters the length of the head.

Pronotum rounded in front, narrower behind than in front. Pronotum mesonotal suture well defined; meso- and epinotum rather flattened

above, declivity of the epinotum vertical and very short. Node of petiole quadrate-globose, slightly wider behind than in front, the ventral lamella produced in a wide angle. First abdominal segment narrow at the base, 2nd and 3rd segments sub-equal, and a little longer than the 1st, 4th segment a little shorter than the preceding, 5th segment widely and semicircularly excavated apically, the dorsal boundary of the excavation forming a sharp edge, ending on each side inferiorly in a short tooth.

♀ minor. 5-6 mm. This differs from the ♀ max. in the following characters. The colour is slightly lighter, and the head is a little narrower behind than in front, and is only arcuately emarginate behind. The apex of the mandible is not blunt, but ends in two sharp teeth, the lower tooth being the larger; the tooth on the inner margin is also acute. The pubescent hairs on the body are longer.

♀ minima. 1.7-2 mm. Colour pale dirty yellow. Flagellum 9-jointed. Pilosity and pubescence stronger than in the ♀ minor. Mandibles without a tooth on the internal margin, and with the upper apical tooth almost obsolete, making the mandible an elongate triangle.

♂. 25 mm. long. Thorax 8 mm. long, 4.5 mm. wide; head 1.5 mm. long, 4.3 mm. wide; abdomen 13.5 mm. long. Head reddish brown, mandibles, antennae, and legs ferruginous; thorax, petiole, and abdomen dark brownish yellow, the pronotum and petiole with a rather castaneous tint. The whole body, except the legs, mandibles, and antennae covered with a close and fine yellow pubescence. Head, thorax, coxae and petiole with long, silky, and pale yellow hairs. The apical abdominal segment has similar hairs, but shorter. Head behind the eyes rather shining, the rest of the head, and the body, impunctate and dull, all the legs smooth and shining. Head much wider than long, a very little wider than the thorax. Front of the head somewhat raised in the middle, leaving a broad but shallow depression on each side, reaching to the eyes. Frontal carinae obsolete. Eyes moderately large; ocelli on a raised area, the vertex concave between the posterior ocelli. The scape extends back as far as the anterior ocellus, flagellum two and a half times as long as the scape; 1st and 2nd joints not longer than wide, the rest longer than wide; the 2nd joint is pubescent and dull below. The mandibles are flattened, widest at the base, thinning after the basal third, the apex rounded. When the thorax is looked at from above, the pronotum is not visible, as it lies entirely below the mesonotum; the latter is half as long again as wide, the parapsidal sutures distinct; the scutellum

is one-third as long as the mesonotum; the epinotum is rounded, its dorsum shorter than the scutellum. The node of the petiole is wider behind than in front, rounded above and at the sides, the ventral lamella densely fimbriated and produced into a triangle, blunt at the apex. First to 5th abdominal segments wider than long, each segment a trifle longer than the preceding, 6th segment longer than wide, wider at the base and narrowing towards the rounded apex. Genital armature castaneous and very shining. Seen from below, the external margins of the volsella are shallowly concave from base to near the apex, and fringed with long hairs; stipites strongly convex above. Wings slightly yellowish brown, nervures brown.

♀. Two specimens of this sex, belonging to the South African Museum, have been examined. One is preserved dry, the other in spirit. The former appears to have retained the natural proportions more truly than the other, and the following description is based on the dry specimen, except where the other is specifically mentioned.

Length, from apex of opened mandibles to apex of hypopygium, 39 mm.; length of head, from anterior margin of clypeus to the occipital margin, 3·7 mm. dry specimen, 3·8 mm. spirit specimen; length of thorax 5 mm.; width of thorax, 4·5 mm. dry specimen, 5 mm. spirit specimen; length of abdomen from base of 1st segment to apex of pygidium, 25·2 mm.

The colour is much lighter in the spirit specimen, in which also the thorax is not much darker than the abdomen. In the dry specimen the abdomen is pale castaneous or a pale burnt-sienna, the head and thorax dark castaneous red, mandibles piceous in their inner margins, the hypopygium piceous on the external margins. The sides of the hypopygium rather dull, the rest of the insect very smooth and shining, and sparsely punctured with very small punctures. The punctures on the head and pronotum are a little larger than elsewhere; the sides of the pronotum posteriorly closely punctured, sub-opaque. Head one and three-fifths as wide as long, as wide in front as behind, sides convex, posterior margin moderately and angularly emarginate, posterior angles rounded but prominent. The dorsum of the head, seen from the side, is slightly flattened, the median groove arising from the occipital margin is almost obsolete above; there are three very small depressions above, marking the position of the atrophied ocelli. Clypeus depressed above the anterior margin, which is straight; frontal carinae short, raised in front, divergent behind, between them lies a round depres-

sion continuous with the posterior margin of the clypeus. Mandibles curved strongly inwards, half as long as the head, narrowing towards the apex, which is acute; the inner margin is feebly convex in the middle, and concave on each side of that point. Antennae 11-jointed, scape as long as the flagellum less the apical joint; the latter is longer than wide, and as long as the two preceding joints together; the 1st joint as wide as long, the rest wider than long. Pronotum wider than long, about as wide as the head between the posterior angles, the sides convex, the anterior portion somewhat produced to form a neck, the pro-mesonotal suture well defined. Mesonotum as long as wide, separated from the epinotum by a metanotal region which is one-sixth as long as the mesonotum. The impression between the meso- and metanotum is deeper and more distinct at the sides. The lateral margin of the thorax, between the meta- and epinotum is distinctly excised. The epinotum is nearly twice as wide as long, on each side posteriorly just above the very short declivous portion there is a pronounced angle; the margin between these angles is roundly produced in the middle. Seen from above, the anterior margin of the petiole is shallowly concave in the middle. The petiole widens behind, and the posterior angles are produced backwards and somewhat outwards into sub-acute teeth; the posterior margin is convex. The petiole is rather flattened above, and twice as wide (across the base of the teeth) as it is long.

The 1st-4th abdominal segments are wider at the apical margin than at the base, and considerably wider than long. The 5th segment is widest at the base and narrows towards the apical margin, which ends in two short sub-acute teeth, separated by a semicircular excision.

The hypopygium is bifurcate along its apical third, the excision between the branches of the fork being narrow and wider at the base. At the base of the hypopygium the external margins are curved upwards on each side so as to form a flap, which is prolonged on its upper margin into a compressed tooth-like process, rounded at the apex and directed backwards. Internal to the flaps, and at about two-thirds of the distance from the external margins, there is on each side a longitudinal raised ridge, which ends abruptly a little before the base of the apical forks.

The apical joint of all the tarsi is wanting in both specimens.

This species has been recorded from the larger part of the South African region. In S. Rhodesia it is common, and more frequently met with than any other species of the genus. (S.A.M., R.M., G.A. colls.)

D. BRAUNSI, Emery.

Zool. Jahrb. Syst., vol. 8, p. 718, ♀, 1895.

This species is exceedingly similar to *helvolus*, differing from it chiefly in the shape of the head, which in the ♂♂ and larger ♀♀ is distinctly wider in front than behind, the sides converging posteriorly, so that the occipital margin is rendered shorter. The puncturation of the vertex is also shallower and sparser in all the ♀♀, but in specimens determined as *Braunsi* for me by Dr. Forel, I do not find that the smallest workers (2.8 mm.) have the sides of the head entirely smooth as described by Prof. Emery. The ♂♂ do not exceed 8 mm. in length. The colour, especially of the larger forms, is slightly darker than in *helvolus*; otherwise similar to that species.

Bulawayo. (R.M., G.A. colls.)

D. AFFINIS, Shuckard. (Plate IV., fig. 35.)

Ann. Nat. Hist., vol. 5, p. 316, ♂, 1840.

Mayr (*Typhlopone oraniensis*, var. *brevinodosa*), Verh. Zool. Bot. Ges. Wien, vol. 12, p. 737, ♀, 1862. Emery, Mem. Accad. Sc. Bologna, Ser. 5, vol. 9, p. 421; ♂, ♀, 1901.

The ♀♀ of this species are very similar to those of *helvolus* and *brevipennis*; *helvolus* is more strongly and closely punctured on the head, and does not reach to such a large size in ♂ or ♀ maxima. From *brevipennis*, the workers of this species can be distinguished only with difficulty, the main distinction being the shape of the petiole, as given in the key above. ♂ or ♀ maxima. 10–11 mm. Head, from 3.3 mm. long × 2.6 mm. wide, to 3.7 mm. long × 2.8 mm. wide. The colour is like that of *helvolus*; the abdomen is lighter than the thorax. Head shining, mandibles finely reticulate and sparsely punctured; dorsum of the pro- and mesonotum smooth, epinotum reticulate and dull, the opacity being due to a microscopic rugulosity. The puncturation on the thorax is shallower and less abundant than on the head. The petiole is duller than the thorax, and the puncturation feebler and less regular. The abdomen is shining, shallowly and sparsely punctured. All the punctures bear short hairs, intermixed with which on the abdomen are some longer semi-erect hairs. There are a few pilose hairs on the ventral surface of the abdomen, the clypeus, mandibles and pygidium; the hairs on

the legs are comparatively longer and more abundant than in *helvolus*.

The head is sub-rectangular, the posterior margin deeply excised, the sides more or less feebly bisinuate. The mandible is acute at the apex, with a pre-apical tooth at about the middle of the inner margin, and a rudiment of a sub-apical tooth. The frontal carinae are a little separated in front, but converge abruptly above the antennal sockets, and each ends in a sharp spine pointing obliquely backwards.

The petiole is wider than long, widest posteriorly; it is comparatively larger than in *helvolus*. The tooth-like projections of the pygidium are not quite so prominent, otherwise similar to *helvolus*.

♀ minor. 8-5.5 mm. Head, 2.6 mm. long \times 2 mm. wide, to 1.7 mm. long \times 1.4 mm. wide. The posterior margin of the head is less deeply excised, the sub-apical tooth of the mandibles larger, nearly equal to the pre-apical. The puncturation is finer, and the pubescence a little more distinct, and the colour lighter than in the ♀.

♀ minima. 3.5 mm. or less. In these the anterior margin of the clypeus is more projecting, the frontal carinae are closer together and less acute posteriorly, or in examples 3 mm. long, with the spinous processes entirely obsolete. Antennae with 7-8 joints, all the joints of the flagellum, except the 1st and last, much wider than long. The whole body is shining, and the colour dirty ochreous.

♂. 22.2 mm. This is exceedingly like that of *helvolus*, differing practically only in the following characters.

It is a little smaller than *helvolus*, and the mesonotum is rather narrower; according to Emery, the mesonotum is also more densely clothed with both long and short hairs, but this character is perhaps rather difficult to appreciate. The strongest distinction lies in the shape of the stipites, seen from above. In this species the stipites narrow gradually from base to apex, so that the lateral outline forms a continuous curve; in *helvolus* the stipites are narrowed in the middle and widen out again beyond it, so that the profile is sinuate.

♀ unknown. I am not aware of this species having been recorded so far, from the region dealt with in this work, but have included it as it may perhaps be found in the future within the more northern parts of S. Rhodesia. It is a more northern species, but has been recorded from the southern Belgian Congo.

(G.A. coll.)

D. BREVIPENNIS, Emery.

Zool. Jahrb. Syst., vol. 8, p. 721, ♂, 1895. Mem. Accad. Sc. Bologna (5), vol. 9, p. 424, ♀, 1901.

"♂. A small species, of a somewhat stumpy build. Particularly noticeable on the head are the small and but slightly projecting eyes, which are separated from the base of the mandibles by a distance about equal to the thickness of the scape. The mandibles are plainly smaller than in *affinis*. The antennae are long, the scape shorter than the first 5 joints of the flagellum, or about as long as one-third of the latter. Thorax stout, petiole as in *affinis*. There are some erect hairs on the pronotum; on the mesonotum and scutellum only a long, adpressed pubescence, which is hardly glossy and does not conceal the chitin. Colour brownish yellow, head excepting the mandibles dark brown; on the mesonotum in front there is a short median band of darker colour, and also two lateral bands which do not reach the anterior margin; the femora and petiole brown; the margins of the abdominal segments brownish. Wings noticeably short, glassy and with brown nervures; the transverse nervure joins the middle of the root of the cubital. The genital organs are constructed much as in *affinis*, but the outer parameres seen from above are markedly broad, not excised at all laterally. Length, 20-21 mm.; head and thorax, 8 mm.; width of thorax, 4 mm.; anterior wings, 12.5 mm."

♀ 8.5 mm. This worker is deceptively like that of *affinis*, differing only in its smaller size in the major forms, and in having the petiole shorter and wider behind than in that species.

The type species has not been recorded from this region, but I quote the description for the purpose of making clear the comparisons in the account of the following variety, which was originally found at Salisbury, S. Rhodesia.

Var. MARSHALLI, Emery.

Mem. Accad. Sc. Bologna (5), vol. 9, p. 425, ♀ ♂, 1901.

♂. 19 mm. Width of thorax 4 mm. This differs from the type in having a stouter and darker thorax, castaneous brown, and the nearly black head; the sides of the thorax are lighter; the longitudinal lateral fascia and the spots on the anterior part of the mesonotum less clearly defined, on account of the darker ground-colour.

♀ max. 8.5 mm. Head, 2.8 mm. long × 2.3 mm. wide. The colour is a little darker than the type species, and the puncturation

of the petiole, which is less shining, is more abundant. Otherwise like the type.

Race ZIMMERMANNI, Santschi.

Rev. Suisse Zool., vol. 18, p. 738, ♀, ♂, 1910.

♀ 8 mm. Colour, puncturation and general characters exceedingly similar to those of *helvolus*. The sides of the head are, however, slightly sinuate; the teeth of the mandibles more acute, and the petiole a very little wider. The ventral lamella of the petiole is produced behind into a sharp spine, pointing downwards (the lamella is truncate in *helvolus* ♀).

♀ media, 6-3.4 mm. These do not appear to me to present any appreciable differences sufficient to distinguish them from workers of *helvolus* of the same size; the ventral lamella is not spinously produced as in the ♀. Of the smallest ♀ ♀ (2 mm.) described by Santschi, I have seen no examples; they have 8-jointed antennae. My specimens have been named for me by Dr. Forel, but I must confess that to me they appear so exceedingly similar to *helvolus*, as to be almost indistinguishable, except in the character of the ventral lamella in the ♀.

♂ 19-20 mm. Yellowish brown. Head, mandibles, and femora brown-black. There are two short brownish bands on the middle of the mesonotum anteriorly. Laterally, a band twice as long as the preceding covers the parapsidal sutures. There is also a long band on the posterior margins of the abdominal segments. The petiole is entirely yellowish brown except the portion articulating with the abdomen, which is blackish brown. Antennae and legs dark reddish brown. Pilosity rusty on and below the head, rather sparse on the front of the pronotum, more abundant on the epinotum and petiole. The rest of the body is covered with a fairly dense pubescence, fairly long on the thorax, but shorter on the abdomen. The head is small, as in *moestus*, but a little wider. The eyes are dull and small, with distinct facets. The distance between the lateral ocelli much shorter than that separating them from the eyes. Mandibles wider than in the type, the outer edge less emarginate, straighter. The scape is as long as the first 6 joints of the flagellum taken together; 2nd joint of flagellum pubescent beneath, hardly longer than half the succeeding joint. Length of thorax, 7 mm.; width in the middle, 4 mm. Length of the front wing, 14.5 mm. Petiole narrower than in *affinis*, wider than in *moestus*. Abdomen 3.8 mm. wide, cylindrical. Genital armature brownish, 5 mm. long by 3 mm. wide. The extremity of the stipites is narrower than in

the type and rather densely fringed. The volsella is a little longer; otherwise like the type. Madingou, French Congo."

Hillside, Bulawayo, ♂ ♂ only. (R.M., G.A. colls.)

D. *FURCATUS*, Gerstaecker.

Stettin Ent. Zeitschr., vol. 33, p. 267, ♀, 1872. Emery, Bull. Soc.

Ent. Ital., vol. 19, p. 349, ♀, 1887.

"♀. 34 mm. Abdomen, 26 mm. Colour light rusty red, . . . smooth and shining. Antennae with 10-jointed flagellum. Head quadrate but rounded, the median dorsal groove is deepest behind, and very shallow on the vertex. The frontal carinae almost reach to the anterior margin of the clypeus, which lies between them in the shape of a small triangle. On the anterior portion of the vertex, the median groove forms an oval, well-defined and strongly punctured pit [*i.e.* the depressed area between the frontal carinae.—G. A.]. The posterior corners of the head are obtusely triangular and produced backwards. The upper surface of the head is finely but distinctly punctured, more sparsely so behind than in front, the latter region being slightly dull owing to an exceedingly fine sub-punctuation. . . . The prothorax is wider at the shoulders than at the posterior margin. . . . The mesothorax is flattened, very shallowly impressed in the middle in front, punctured like the prothorax, but more strongly than the head, nevertheless distinctly shining. The metathorax is also depressed, with a transverse groove on the compressed anterior portion, and the posterior part is slightly swollen on each side; the segment is more finely and sparsely punctured than the pro- or mesothorax. The femora and tibiae are punctured; the last three joints of the tarsi wanting in all the legs. First abdominal segment wider than long, trapezoid, 3rd–6th segments longer and wide and parallel-sided. Hypopygium two and a half times longer than wide, with a transverse furrow-shaped impression along three-fifths of its length on each side; narrowed posteriorly and forked in the middle of the posterior margin by a deep oval excision, the two arms of the fork long and obtusely triangular, and flat. The surface of the hypopygium, excepting its base, is finely punctured, between the lateral furrows and the median excision fairly densely punctured. The 5th dorsal segment is longer than the 4th, but ends before the fork of the hypopygium, its posterior margin on each side wide and flat, in the middle narrow and deeply emarginate, so as to form on each side of the emargination a triangular and projecting point. At the base of

the hypopygium, and on each side of the genital orifice, is a raised lamella which is vertically truncate posteriorly. The outer margins of the hypopygium at its base are also raised and curved, so as to form a shorter and more obtuse lappet on each side. Cape."

I have copied the author's description, excluding only those remarks in which comparison is made with the Indian *D. laevigatus* (*glaberrimum*). The above description of *furcatus* was published as far back as 1872, and as far as I am aware no species of *Dorylus* with unattached ♂ ♀, to which this ♀ might be ascribed, is known from the Cape even now. Without having seen the original specimen it is not possible to form any definite conclusion, yet a comparison made between the above description and a *helvolus* ♀, in the collection of the South African Museum (described p. 118, ante), suggests to my mind a strong probability that Gerstaecker's species is only an individual aberration of *helvolus*, or at the most only a variety of that species.

SUB-GENUS TYPHLOPONE, Westwood.

Introduction Class, Insects, vol. 2, p. 219, 1840. Emery, Zool. Jahrb. Syst., vol. 8, p. 701, 1895.

D. (TYPHLOPONE) FULVUS, Westwood.

Loc. cit. ♂. Emery, *loc. cit.* ♂. Shuckard (*D. juvenculus*), Ann. Nat. Hist., vol. 5, p. 319, ♂.

The type species appears to be confined to the northern portion of Africa, and is replaced in equatorial and S.E. tropical Africa by the following race, which has not been recorded to my knowledge from temperate South Africa.

The sub-genus includes only this species and *D. labiatus* of the Indian region.

Race BADIUS, Gerstaecker. (Plate IV., figs. 31, 31a, 32, 32a, 32b.) Monatsber. Akad. Wiss., Berlin, p. 261, ♂, 1858. Ditto, Peter's Reise, n. Mossamb. Zool., vol. 5, p. 499, ♂, 1862.

♂ or ♀ maxima. 13 mm. Head 3.2 mm. long × 2.8 mm. wide. Mandibles piceous brown, scape of antenna, head and thorax dark castaneous red, but getting gradually lighter from the head to the petiole; abdomen dark brownish yellow, or ochreous with a slight reddish tinge; legs ferruginous; flagellum dark brown above, lighter underneath. Head, thorax and abdomen very shining, except the

anterior third of the head, the vertical anterior face of the pronotum, the mesopleura, the petiole and the epinotum, which are duller, owing to a rugulosity of the surface which is almost microscopic on the head, but somewhat stronger on the other parts. Head sparsely punctured, with small, discrete and shallow punctures; scape of antenna more coarsely punctured. Pro- and mesonotum sparsely, but much more coarsely punctured than the head. Epinotum and petiole very shallowly and more closely punctured, the punctures being smaller than on the pronotum. Abdomen finely and sparsely punctured. A short, yellow pubescent hair is inserted in each puncture, those on the head being very fine.

Head very slightly narrowed posteriorly, the sides are almost parallel, posterior margin shallowly arcuate. Mandibles sub-nitidulous, striato-punctate, the apex sub-acute, the pre-apical tooth small and blunt, the sub-apical very obtuse or represented only by a swelling on the margin. The frontal carinae are considerably raised, divergent and vertical in front, and project distinctly over the very short clypeus; they are angularly bent just above the antennal sockets, so that their posterior half is horizontal. Between them posteriorly is a very smooth and shining oval area, which is continued into a moderately deep groove with rounded margins which becomes very faint on the vertex, and again deepens towards the occipital margin. The frontal carinae are not spinously produced backwards as in *helvolus* and *affinis*. Antennae 11-jointed; the scape is strongly incrassate towards the apex, and not longer than the first 7 joints of the flagellum. The 1st joint of the flagellum very short and about as long as wide, all the other joints except the apical much wider than long; all the joints closely punctured and densely pubescent beneath. Prothorax narrowed and depressed anteriorly to form a short neck; it is widest behind this part and narrows towards the mesonotum, from which it is separated by a distinct and angular suture. The mesonotum widens posteriorly, where it is two-thirds wider than long. The epinotum is widest at its base (on each side of which lies a prominent stigmatic orifice), and narrows but slightly towards the short and vertical declivity; the brow of the latter is considerably rounded above and at the corners. The dorsum of the epinotum has a longitudinal median impression. Seen from the side, the dorsum of the whole thorax is flat and rather distinctly delimited from the sides, which are vertical or nearly so. The node of the petiole is almost sub-quadrate, or a little wider behind than in front, as long as, or only very little longer than wide, all the angles strongly rounded; the ventral lamella is produced into a triangular

projection. The abdomen widens gradually towards the apical margin of the 3rd segment, all the segments wider than long. The pygidial area of the 5th segment is dull and only shallowly impressed, forming a more or less oval fovea, not semicircular or bounded by a sharp raised margin, as in the sub-genus *Dorylus*. By this character, and also by the longer petiole and the frontal carinae without spines, all the workers of this species can be distinguished at a glance from those of the sub-genus *Dorylus*.

♀ minor. 8-3 mm. In these the colour is much lighter, or more or less reddish yellow. Antennae 11-jointed as in the maxima. Proportionately the head is wider in front than in the ♀ maxima. The puncturation is finer and the pubescence is more apparent. In the smaller forms the frontal carinae project further forwards and are more convergent posteriorly, or even meet to form a single lamina. The median impression on the head is much shallower and shorter, or almost obsolete. The mandibles are more shining, with three teeth more acute and distinctly defined.

♀ minima. It is probable that there are some of this class, and measuring less than the smallest of the minor class. I do not, however, possess any smaller than 3 mm., nor do I know of any workers of a smaller size of this race having been described by any author.

♂. 33 mm. Thorax 10.2 mm. long × 5.8 mm. wide; petiole 2.8 mm. long × 4 mm. wide; length of front wing, 22 mm. Head in front and above, dark brown, occipital surface of the head, antennae, mandibles and all the legs ferruginous or castaneous red. Thorax, petiole, and abdomen pale yellowish red, the 6th dorsal segment and the margins of all the abdominal segments darker. The thorax is somewhat more yellowish than the abdomen. The anterior part of the head between the anterior ocellus and the clypeus clothed with long, curved, silky yellow hairs; a tuft of similar hairs on the clypeus and the base of the mandibles. The front of the head is densely clothed with a short brownish-yellow pubescence, the posterior portion, behind the eyes and ocelli, glabrous. The thorax and petiole with a rather long, very dense, decumbent, yellowish or golden pubescence; the pubescence of the abdomen is much finer, and has a silky sheen, the margins of all the segments with longer hairs, and the 6th segment densely clothed with long silky hairs. The metanotum is sparsely clothed with short stiff hairs; the brow of the epinotum, the posterior dorsal margin of the petiole, and the space between the ventral lamella and the 1st abdominal segment and all the coxae fringed with long golden hairs. The whole body is sub-opaque and microscopically rugulose, except the

occipital part of the head, the 6th dorsal abdominal segment, and the legs, which are smooth and shining.

The head is much wider than long; seen in profile, rather biconvex. The anterior margin of the clypeus is obtusely angulated; from the posterior margin to the anterior ocellus there is a narrow impressed line, between which and the inner margins of the eyes the surface of the head is feebly convex on each side. Seen from the front, the dorsal profile of the head is very convex, the convexity being broken by a slight depression between the two posterior ocelli. The latter are very convex, prominent and large. The scape narrows towards its apex, and when directed upwards the apex just reaches the level of the top of the head; it is as long as the first 7 joints of the flagellum. The latter is 12-jointed, all the joints, except the first, longer than wide. The first joint is glabrous and shining below, the remaining joints pubescent and very finely punctured all over. The whole thorax is somewhat globose, and its dorsum raised much above the level of that of the head and abdomen. Seen from above only a narrow portion of the pronotum is visible, but at the sides it can be seen as a large triangular piece between the mesonotum and the mesopleuron. The mesonotum is convex in front and at the sides, slightly flattened posteriorly, and about one-fifth longer than wide; anteriorly and on each side of the middle there is a well-defined impressed line, which ends abruptly at about the anterior 4th of the mesonotum. The parapsidal sutures are distinct. The scutellum is flat in front, convex behind and at the sides, and has a wide median groove on its posterior half. The metanotum is very short; seen from the side very convex. The epinotum at the brow of the declivity is nearly four times as wide as long. The petiole is moderately convex above and at the sides, and one-third wider than long. The ventral lamella is produced into a blunt angular projection, truncated behind and in front. Abdomen cylindrical, all the segments decidedly wider than long. The 6th segment is narrowed towards the apex, which is rounded. The stipites, seen from above, are slightly divergent at their apices, and densely fringed with golden hairs; the volsellae are long, and reach almost to the apex of the stipites. All the femora are compressed and flattened from front to back, and much wider at the base than at the apex. Wings with a slightly yellowish tinge, the nervures dark brown.

The ♂♂ of this species are exceedingly common at light during the rainy season in South Rhodesia; the ♀♀, however, do not appear to be so frequently met with as *helvolus*.

♀ unknown. (G.A., R.M., S.A.M. colls.)

Race RHODESIAE, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 111; ♀, 1913.

The largest ♀, 8·5 mm., of this race is smaller than that of the type, and the smallest examples, 3 mm., hitherto found, are probably not the minimum size.

This race differs from the type and from *badius* by its lighter, or more straw-yellow colour. The head is shorter and more feebly emarginate posteriorly, and hardly more than one-sixth longer than wide. The node is as wide as long.

Hab. Bulawayo. (S.A.M., R.M., G.A. colls.)

SUB-GENUS RHOGMUS, Shuckard.

Ann. Nat. Hist., vol. 5, p. 323, 1840. Emery, Zool. Jahrb. Syst., vol. 8, p. 702, 1895.

D. (SUB-G. RHOGMUS) FIMBRIATUS, Shuckard.

(Plate IV., figs. 36, 36a.)

Ann. Nat. Hist., vol. 5, p. 325, ♂, 1840. Emery, Zool. Jahrb. Syst., vol. 8, p. 736, ♀, 1895. Brauns, Zeitschr. f. Hymen u. Dipt., vol. 3, p. 294, ♀, 1903.

This species is the only representative of the sub-genus in South Africa. The variation in the worker caste is more complicated than in the other species of the genus, owing to the fact that there is not a gradual differentiation between the largest and the smallest forms. There are practically four groups, having either 11, or 10, or 9, or 7-8 jointed antennae, each group having its maxima and minima forms, with the shape of the head varying according to the size of the insect.

The forms with 11-jointed antennae vary in length from 8. to 3·5 mm.

„	10	„	„	3·1 to 2·7 mm.
„	9	„	„	3 to 2·6 mm.
„	7-8	„	„	2·2 to 1·7 mm.

The ♀ ♀ of this species may be distinguished from either *helvolus* or *affinis* by the absence of the spiniform posterior projections of the frontal carinae, and also, in the largest examples, by the denser puncturation and the dull thorax, which is finely but distinctly rugulose. From *fulvus*, race *badius*, which this species resembles in the indistinct pygidial impression, it may be distinguished in the larger forms by the dull thorax, and in the smaller by the much stronger puncturation.

♂ maxima. 8 mm. Head, flagellum and thorax castaneous red, the head a little darker than the thorax, and the petiole lighter, abdomen, legs, and scape reddish yellow. The anterior third of head is finely punctured, microscopically rugulose and dull, the rest of the head above and at the sides is closely and strongly punctured, the space between the punctures smooth and shining. The frontal carinae are finely rugoso-punctate, the mandibles sparsely punctured, smooth and shining. The pro- and mesonotum with larger but shallower punctures than on the head, the epinotum very faintly punctured; the whole thorax is transversely rugulose and sub-opaque, the rugulosity on the epinotum being stronger, so that that segment is entirely dull. The petiole is very finely rugoso-punctate and dull. The scape of the antenna, the abdomen and the legs shining, finely and sparsely punctured. The pubescence is very short and scanty on the abdomen, and almost entirely absent on the head and thorax; there are a few long hairs on the clypeus and pygidium, and two or three on each side of the posterior angles of the node. The head is as long as wide, widest in front, narrowing only slightly towards the posterior angles, the posterior margin shallowly emarginate. The posterior margin of the pronotum is arcuate, not angularly emarginate as in *badius*. The node of the petiole is one and a quarter times wider than longer. The median impressed line is shallow in front of the head and on the vertex, moderately deep posteriorly. The sub-apical tooth of the mandible truncate. Antennae 11-jointed.

♂. Antennae 11-jointed, 5-3.5 mm. These differ from the maxima by having the head proportionately shorter, and wider anteriorly. The colour is also lighter; the anterior third of the head is less dull, and the thorax is more shining; the pubescence of the head and thorax more distinct.

♀. Antennae 10-jointed, 3.1-2.7 mm. The head is only a little less wide than in the smallest of the forms with 11-jointed antennae. The puncturation is, relatively to the size of the body, much coarser.

♀. Antennae 9-jointed, 3-2.6 mm. In the smaller of these the head resembles the preceding group; in the larger on the contrary, the head is narrower in front than behind, its sides are distinctly convex, and the clypeus projects further forwards.

♀. 8- or 7-jointed, 2.2-1.7 mm. In the larger of these, the projection of the clypeus is even more pronounced, but the head is only very slightly narrowed in front; on the other hand, in the smaller forms, the head is very plainly narrower in front than

behind, and the clypeus projects considerably forwards, the puncturation and pubescence is also more pronounced.

♀. 50 mm. Head 4 mm. long \times 5 mm. wide; thorax 6.5 mm. long; abdomen 30 mm. long; free portion of hypopygium 7 mm. long. Head, thorax, petiole and dorsal surface of abdomen ferruginous, ventral surface of abdomen and legs, ferruginous-flavous, hypopygium castaneous; node and 1st abdominal segment somewhat darker. Head a little wider than the posterior margin of the petiole, much wider than the thorax, wider than long. Sides of the head sinuate in the middle, occipital margin widely but shallowly emarginate. A deep median groove extending from the posterior angle of the clypeus to the occiput, divides the dorsum of the head into two halves. The anterior face of the head, above the antennal sockets, moderately excavated. Clypeus flat, with a slight emargination in the middle of the anterior margin, angularly produced behind between the frontal carinae. The latter are tumid and not distinct. The antennae do not reach the occipital margin; the scape as long as the flagellum. The latter 10-jointed, the 1st joint slightly longer than broad, the 2nd-9th joints wider than long, the apical twice as long as wide. Mandibles about three-fifths as long as the head, curved inwards, the inner edge bounded by a raised line, the apex acuminate. Dorsum of thorax rather flattened, the sides of the pronotum rounded, of the meso- and metanota sloping inwardly. Epinotum a little wider than the pronotum, the declivity obsolete. The petiole is roughly semicircular, the anterior margin sinuate, the lateral angles considerably rounded; anteriorly there is a slight median impression above; the posterior margin is convex, except laterally behind the posterior angles, where there is a concavity on each side. The posterior angles of the node are prominent, the apices obtuse. First-3rd abdominal segments sub-equal in length, 4th and 5th sub-equal, both slightly longer than the 3rd, all the segments wider than long. The hypopygium differs very considerably from that of *helvolus*. The median apical incision is indeed so deep that, when seen from above, the organ may be described as consisting of a short basal portion, carrying two lateral projections which curve downwards and slightly inwards, and are rapidly narrowed towards their apices. The upper surface of these projections are longitudinally hollowed out, the external edge of the excavations so formed being less sharp than the internal. The left-hand fork or projection has at its base a smaller excavation, which is only feebly indicated in the right-hand fork. All the legs have 5 joints to the tarsi, these are shorter than the tibiae.

The head is dull, microscopically punctulate, with a few larger punctures interspersed. The thorax is sub-nitidulous, moderately and finely punctured, also with a few larger punctures interspersed. The petiole is punctured and shining. The abdomen is very shining, the dorsal surface very sparsely and finely punctulate. The hypopygium is more or less rugulose and dull, the projections somewhat shining externally.

The above description is drawn from the specimen in the collection of Dr. H. Brauns, Willowmore. This specimen was taken from the nest by Mr. G. A. K. Marshall at Salisbury, S. Rhodesia.

"♂. 37 mm.; alar expanse, 46 mm. Rufo-testaceous, very pilose upon the face, the thorax above and beneath, the coxae, also the petiole below, the margins of the terminal segments above and of the two last beneath, which are densely fringed. The head black upon the vertex and behind; face convex, sulcated in front of the anterior ocellus; the ocelli large, disposed in an equilateral triangle on the vertex; with about the diameter of one intervening between the anterior ocellus and the posterior pair; antennae slender, setaceous, the scape one-fourth the length of the organ; mandibles broad, nearly triangular, very slightly curved, the inner edge acute. Thorax gibbous in front and at the scutellum; prothorax very distinct, and metathorax slightly produced and rounded posteriorly; wings sub-hyaline, their nervures robust and brown, the radial lost in a large dilated dark patch at the commencement of the marginal cell; the cubital slightly undulated, the first recurrent inserted just beyond the middle of the first sub-marginal cell (cubital), and the 2nd recurrent half-way between the first and the termination of the cell, and diverging obliquely towards the edge of the wing; legs castaneous, the femora elongate, ovate, compressed, their outline slightly rounded above and below. Abdomen opaque, clavate, the petiole transverse and quadrate convex, fringed at its apex, and very pilose beneath, where it is slightly longitudinally carinated, not so wide as the 2nd segment [*i.e.* 1st abd. segment, mihi, G.A.] which viewed above is nearly quadrate, the remainder all transverse; of these the penultimate and terminal are the largest, the latter deeply emarginate in the middle, fimbriated along the edge, as are also the two last ventral segments, the terminal of which is semicircular, and the penultimate nearly quadrate."

As I have had only a considerably damaged specimen before my eyes, I have preferred to copy Shuckard's original description. The ♂ of this species is easily distinguished from all our other

species by the very globose thorax, which, with the petiole, is densely clothed with long, golden, erect hairs, and by the shape of the abdomen, in which the apical segments are much wider than the 1st-3rd, and by the dense dark golden fimbria of the last two segments.

(R.M., G.A. colls.)

SUB-GENUS ALAOPONE, Emery.

Ann. Mus. Stor. Nat. Gen., vol. 16, p. 274, 1881. Zool. Jahrb. Syst., vol. 8, p. 702, 1895.

There are but three species of this sub-genus recorded from the South African region, all known only in the male sex.

D. (Sub-G. ALAOPONE) *ATTENATUS*, Shuckard.

" ♂. 22 mm. Alar expanse 31.5 mm.

Pale reddish, testaceous, opaque, sub-pubescent, slender; head black, except the mandibles, which, as well as the scape of the antennae, are pitchy, the latter barely one-fifth the length of the organ, which is filiform and elongate; ocelli posed in a triangle at the vertex, moderately large, with about the space of the diameter of one ocellus between the posterior and the anterior, in front of which the face (which is convex) is sulcated; mandibles broad and very slightly curved, their inner edge acute, with an obtuse angulation at the base within. Thorax gibbous in front and at the scutellum, the latter transverse with a longitudinal impression in the centre; metathorax produced slightly and rounded posteriorly; wings obscure, their nervures reddish brown, the cubital slightly waved, the recurrent straight and inserted at less than two-thirds the length of the 1st marginal cell; legs castaneous, the femora elongate ovate, their outline rounded both above and below. Abdomen obscure, the petiole quadrate, gibbous, the ventral portion very slightly obtusely portioned, the remaining segments transverse, the sexual organ protruding at the apex of the terminal segment and fringed. Gambia? "

I have not met with this species in S. Rhodesia. It has been recorded from Capetown (teste Emery), German S.W. Africa, and Bechuanaland. (Schultze.)

Var. *ACUMINATA*, Emery.

Ann. Soc. Ent. Belg., vol. 43, p. 462, ♂, 1899.

" ♂. This differs from that which I consider as the type, by the form of the stipes in the genital armature. The two pieces of the

pair are near together and parallel in the new variety, whereas they are clearly divergent behind in the type. Moreover, each is obliquely truncated, so that the medial angle of its posterior extremity is acute and pointed. Otherwise like the type, but a little smaller. Orange Free State."

D. (Sub-G. ALAOPONE) *DIADEMA*, Gerstaecker.

Monatsb. Akad. Wiss. Berlin, p. 261, ♂, 1858. Forel, Ann. S. E. Belg., vol. 43, p. 309, ♂, 1899.

Gerstaecker's description of the species is so short as to be useless; a more complete one has been made by Forel, which is as follows.

"♂. 20-20.3 mm. The compound eyes are nearly smooth, the facets not forming separate convexities. Width of the head with the eyes, 3.3 mm.; length of the head without the mandibles, 1.9 mm.; maximum width of the thorax, 3 mm.; maximum width of the abdomen, 3 mm.; width of the petiole 2.1 mm., length 2 mm.; length of anterior wing 15.5 mm.

Elongated like *juvenculus* (= *fulvus*). Mandibles thick, short, bevelled at the apex, smooth and shining. Labrum entire, as in *helvolus* and *nigricans* (bilobed in *juvenculus*). Mutual distance of the posterior ocelli a little greater than their distance from the compound eyes. The ocelli are not very large, much smaller than the interval which separates the posterior ones from each other. The frons gibbous, the frontal sinus of the usual shape, and extending from the frontal area to the anterior ocellus, without forming a deep impressed line such as is seen in *juvenculus*. The clypeus also is not sunken as in that species. Thorax fairly strongly narrowed behind, more so than in *juvenculus*. Petiole cubic and rounded, a little widened posteriorly, where it is wider than it is long, but the width in front is hardly equal to its length. Abdomen narrow and elongate, but slightly curved, as in *juvenculus*. The femora are widely dilated and flattened up to the tibial articulation, which is barely narrowed and not in the least rounded or thickened, as is the case in the other species. The femora are also shorter, being but a trifle longer than the coxae. The scape is barely longer than the first 4 joints of the flagellum.

The head is closely punctured and dull, except the frontal area, which is smooth and shining; the space between the punctures does not appear quite smooth. The thorax, petiole and abdomen are abundantly punctured and sub-nitidulous, the thorax is more shining than the petiole and abdomen. On the latter the punctures are fairly close, but without forming reticulations. The last abdominal

segment is smooth and shining, without deep punctures. A yellowish and slightly erect pubescence is present all over, except on the head, where it is sparser, and on the legs and mandibles, where it is absent. On the abdomen it hides the puncturation to a certain extent. There is a yellow and rather woolly pilosity abundant on the coxae, base of the femora, clypeus, metanotum, petiole and extremity of the abdomen, and ventral surface of the thorax, very sparse or wanting elsewhere. Scapes, tibiae and mandibles smooth, shining and glabrous, except for a small row of little hairs on the edge of the tibiae. The colour is pale testaceous yellow. Head, mandibles, tarsi and a narrow border at the apical margins of all the abdominal segments, rusty red. A transverse brown streak on the vertex. Wings feebly tinged with brown, especially the radial cell which is dark brown. Described from the type."

D. (Sub-G. ALAOPONE) MONTANUS, Santschi, var. BONDROITI, Santschi. (Type) Rev. Suisse Zool., vol. 18, p. 750, ♂, 1910. (Variety) Ann. Soc. Ent. Belg., vol. 56, p. 162, ♂, 1912.

"♂. 22.5 mm. Width of head, 3.8 mm.; width of thorax 4 mm.; width of abdomen 3.8-4 mm. Length of front wing, 20 mm. Light testaceous yellow; margins of abdominal segments narrowly reddish yellow. Head brownish black, slightly reddish in front. Mandibles and legs ferruginous. Wings slightly tinged with brown, stigma and nervures brown. Head finely punctured, dull; frontal area, mandibles, scape and first 2 joints of the flagellum, legs and last segment of abdomen smooth and shining. Abdomen and the thorax dull, as finely punctured as the head, but less densely, thorax slightly shining. A yellow and woolly pilosity is plentiful on the coxae, base of femora, sternum, the sides, the ventral surface of the petiole and last abdominal segment. On the dorsum of the thorax and petiole there is a more erect and silky pilosity, fine and fairly long. The pubescence is downy, short and dense on the head, denser on the abdomen, and less so on the thorax. Head slightly convex above, the frons prominent. The frontal sulcus extends to the anterior ocellus. The lateral ocelli separated farther from each other than from the eyes; the latter shining, with indistinct facets. Frontal area wide and short. Clypeus feebly lobed in the middle. Mandibles short, as wide as half their length, the internal margin as strongly excised as in *diadema*, with the apex bevelled off. There is a wide and shallow impression near their external angles. Petiole cubic, slightly rounded, a little narrower in front, wider than long. Abdomen almost cylindrical. The stipites of the

genital armature are roundly truncate at the apex, the external margins in their lower half are slightly concave. The volsellae are large and extend beyond the stipites. The internal paramera (sagittae) form two wide lamellae as in *diadema*, from which and from *attenuatus* it may be distinguished by the genital armature. (Type Kilimandjaro.) Variety, Transvaal."

I have combined the two descriptions, since the variety differs from the type practically only in the larger head and mandibles, with the former more pilose, and in the stipites, which in the type are smaller and straight on the external margins.

TRIBE ECITINI, Forel.

With only one genus in the South African region.

GENUS AENICTUS, Shuckard.

Ann. Nat. Hist., vol. 5, p. 266, 1840. Smith, Journal Linn. Soc., Lond., vol. 2, p. 79 (*Typhlatta*), 1857. E. André, 2me Suppl. aux Fourmis, p. 2, 1885. Emery, Bull. Soc. Ent. Ital., vol. 33, p. 43, 1901.

Characters.

♂ Monomorphic, or varying only in size (except *E. mariae*, Em.), and that within narrow limits. Clypeus in the form of a narrow band above the mouth. Frontal carinae vertical, close together, and curved round the antennal sockets. Mandibles dentate. Eyes absent. Antennae 10-jointed, the terminal joint not noticeably thicker than the rest. Thoracic sutures feeble, or obsolete. Epinotum unarmed. Tibiae with one rudimentary calcar. Abdomen short, more or less oval.

♀. (Known only in one species, *abeillei*, André, from North Africa.) Clypeus, frontal carinae and antennae as in the ♂. Eyes absent. Mandibles narrow, edentate and acuminate. Thoracic sutures absent. Petiole 1-jointed and nodiform. First abdominal segment campaniform, not constricted from the following segment so as to form the 2nd joint of a 2-jointed petiole as in the ♂. Abdomen elongate, cylindrical and pointed at the apex. Hypopygium projecting slightly beyond the pygidium. Middle and hind tibiae without calcaria.

♂. Clypeus very short, insinuated between the frontal carinae. The latter short. Mandibles acuminate and edentate. Eyes and ocelli well developed, sometimes very large. Antennae 13-jointed, scape thick, flagellum thinning towards the apex. Mesonotum

gibbous, overhanging the pronotum; scutellum gibbous; epinotum short. Legs slender, tibiae usually with a rudimentary calcar. Petiole 1-jointed, transverse, flattened or excavated above. Abdomen cylindrical or clavate. Genital armature entirely retractile. Stipes large, covering laterally the volsella; lacinia very small. Sub-genital plate forked, the branches linear, parallel and distant. Unlike the species of the sub-genus *Dorylus*, the workers of this genus do not so persistently avoid the light, and may be seen moving about in the open, usually in files, even in the bright sunshine. They are also far more nimble than those insects. Probably many species live an entirely subterranean existence, but all the species which are known to me from Rhodesia have been taken above the surface of the ground.

Key to the ♂ ♀ of the Genus Aenictus. ^v

- (4). 1. Third and 4th joints of the flagellum, or at least the 3rd, distinctly longer than wide.
- (3). 2. Head distinctly wider in front than behind; dorsum of epinotum evenly and strongly reticulate-punctate *eugeniae*, Emery.
- (2). 3. Head not wider in front than behind, widest in the middle; dorsum of epinotum unevenly and shallowly reticulate-punctate *rotundatus*, Mayr.
- (1). 4. Third and 4th joints of the flagellum as wide as, or wider than long.
- (6). 5. Head wider in front than behind in the ♂ major, parallel-sided in the ♀ minor *mariae*, Emery.
- (5). 6. Head not wider in front than behind, workers monomorphic
steindachneri, Mayr.

Without having seen the species, it is not possible for me to include *rixator*, Forel, in the above Key. It appears to differ from the ♀ minor of *mariae*, Emery, only in having 3 instead of 4 teeth to the mandibles.

A. RIXATOR, Forel.

In Emery, Bull. Soc. Ent. Ital., vol. 33, p. 48, ♀, 1901.

“♀. 1.9 mm. Mandibles narrow, their margins nearly parallel, shining, feebly striate and armed with 3 teeth. Frontal carinae short, fused together posteriorly. Head rectangular, as wide behind as in front, feebly emarginate behind, and one-fifth longer than wide. The scape hardly reaches back to the posterior two-fifths of the head, thickened along the apical two-thirds. Third to 6th joints of the flagellum wider than long. Meso-metanotal suture forming a distinct impression, but not constricted. Dorsum of epinotum convex in the middle, the declivity triangular, margined by a distinct ridge. Nodes of the petiole longer than wide, the 1st joint longer and a little wider than the 2nd, having below and right

in front a very short tooth, directed obliquely backwards. Very smooth and shining, including the petiole. Metathorax and sides of mesothorax fairly shining and reticulate. Piligerous punctures distinct but scanty. The pilosity is fine, yellowish, rather short and sparse, and nearly everywhere oblique. Of a dirty yellow colour, hardly brownish; head and thorax rusty yellow or yellowish red.

Natal. (Wroughton.)"

A. ROTUNDATUS, Mayr. (Plate IV., fig. 37.)

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 1, ♀, 1901.

♀. 2.3–3.8 mm. Reddish ochre, the basal segment of the abdomen above in some specimens, a little paler. Smooth, very shining and with a few small punctures on the head, pronotum and abdomen; mesonotum, epinotum and petiole shallowly and rather unevenly reticulate-punctate and dull, but with a slight gloss on the dorsal surfaces. Fine pubescent hairs absent, except on the flagellum. There is a long, yellowish and rather sparse pilosity on the petiole and abdomen, and also, but less regular and scantier, on the head, scape and thorax. Head, excluding the mandibles, very little longer than wide in the larger examples, and about one-sixth longer than wide in the smaller, as wide behind as in front, widest in the middle, convex above and at the sides, very feebly emarginate posteriorly. The frontal carinae are fused together posteriorly, anteriorly they curve round above the very short clypeus, so as to form a semicircular rim round the antennal sockets. The mandibles are elongate triangular, narrowed at the base, dull, finely punctate-striate except along the masticatory margin, which is smooth and shining, and furnished with about 8 or 9 small teeth, and a large sharp apical tooth. The scapes of the antennae reach back as far as the posterior four-fifths of the head; 1st–3rd joints of the flagellum longer than wide, 4th, 5th, and 6th as wide as long, 7th a trifle wider than long, 8th longer than wide, apical joint two and a third times longer than wide. Pro- and mesonotum together rather convex longitudinally; laterally the thorax is moderately compressed, dorsally depressed between the meso- and epinotum. The dorsum of the epinotum is widest in the middle, and one and three-quarter times as long as wide; it slopes downwards from the middle to the declivity. The latter is vertical, very short, one-third the length of the dorsum, and feebly margined all round. The 1st joint of the petiole is one-quarter longer than wide, very convex above, but slightly so at the sides; the 2nd joint, seen from above, is narrower in front than behind, and as wide posteriorly as it is long.

The ventral lamella of the 1st joint is produced anteriorly into an angular projection pointing downwards, the 2nd joint is produced below and anteriorly into a blunt projection directed forwards. The 1st abdominal segment as long as, or a little longer than wide, and as long as the remaining segments taken together. Legs long, the 1st joint of the hind tarsi as long as the tibia.

Bulawayo. Port Elizabeth. (Brauns.)

(S.A.M., R.M., G.A. colls.)

A. STEINDACHNERI, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 2, ♂, 1901.

"This species differs from *rotundatus* in the following particulars.

♂. The sides of the epinotum and also of the metasternum plentifully clothed with a backwardly directed pubescence, whereas in *rotundatus* the epinotum has no pubescence and the sides of the metasternum only a scattered pubescence.* The 3rd-7th joints of the flagellum not longer than wide. The mesonotum, the dorsum of the epinotum and the 2nd joint of the petiole, smooth and shining, with a few piligerous punctures. The epinotum like that of *rotundatus*, but the boundary between the dorsum and the declivity is placed rather higher up, and the declivity is bounded by a raised margin only at the sides (in a larger ♂ before me, a curved raised margin above is distinctly present).

Reddersburg, Orange Free State. (Brauns.)"

A. EUGENIAE, Emery. (Plate IV., fig. 38.)

Ann. Soc. Ent. France, vol. 63, p. 48, ♂, 1895.

♂. 3.7-4 mm. Larger and much darker than *rotundatus*, and varying less in size than that species. The colour is a bright castaneous red, lighter on the abdomen. The legs are yellowish red, the sides of the thorax below, and the mandibles, brownish red. This species closely resembles *rotundatus*, differing from it only in the following characters. The pilosity is less abundant, but more regularly distributed and longer. The head is distinctly wider in front than behind. The masticatory margin of the mandible is smooth and edentate, or, in some specimens with traces of three minute teeth behind the apical tooth, which is blunter than in *rotundatus*. The antennae are rather longer, the scape almost reaching back to the occipital margin, and all the joints of the flagellum are distinctly longer than wide. The thorax is rather

* The specimens of *rotundatus* in my collection, determined for me by Dr. Forel, have no pubescence on the metasternum, only a few long hairs.—G. A.

narrower, and less compressed between the meso- and epinotum. The latter is strongly reticulate-punctate, as are also the sides of the mesonotum, the whole of the 1st joint of the petiole, and the sides of the 2nd. The puncturation is decidedly larger and more distinct than in *rotundatus*. The posterior corners of the pronotum also show a slight puncturation. The dorsal surface of the 2nd joint of the petiole is nearly smooth and rather shining. The limits of the dorsum and the declivity of the epinotum are clearly defined, as the brow forms a sharp overhanging edge, so that the declivity also appears somewhat concave. The 1st node of the petiole is a little narrower, more parallel-sided and less convex above than in *rotundatus*. Legs longer and more slender, the 1st tarsal joint of the hind legs as long as the tibiae.

Bothaville, Orange Free State. (Brauns.) Makapan. (Simon.) Bulawayo.

This species was taken on one occasion near Bulawayo in large numbers, marching in single file and carrying larvae from under one large stone to another. Amongst these workers there was found a monstrosity. This specimen has but one joint to the petiole, which is fused on the whole of its anterior surface to the epinotum, which consequently shows no declivity, and is moreover very lop-sided.

(S.A.M., R.M., G.A. colls.)

A. MARIAE, Emery.

Ann. Soc. Ent. France, vol. 63, p. 48, ♀ minor, 1895.

♀. This species varies in size between wider limits than either *rotundatus* or *eugeniae*, varying from 2 to 3 mm. The smaller forms also differ from the larger in the shape of the head, so that it is hardly correct to say that the workers of this species are monomorphic. In the ♀ major the colour is reddish ochre, or similar to *rotundatus*, in the ♀ minor it is paler or straw-yellow, excepting the anterior margin of the head and the margins of the mandibles, which are dark. The pilosity is similar to that of the preceding forms, but scantier. In the ♀ minor the whole body is smooth and shining; in the ♀ major the sides of the mesonotum, and the epinotum, excepting a small smooth area in the middle of the dorsum, are dull and very finely punctured.

The head is nearly parallel-sided in the ♀ minor, moderately convex in the ♀ major; it is a little longer than wide, and shallowly emarginate posteriorly. The mandibles are shining, fairly strongly punctured, with 4 small but distinct teeth on the masticatory margin and a strong apical tooth. The antennae are much shorter rela-

tively than in the other species; the scape does not reach back beyond the middle point of the head; the 1st and 2nd joints of the flagellum are a little longer than wide, the 3rd-8th joints wider than long. The thorax is relatively shorter and wider than in the other species, and is hardly contracted or depressed between the meso- and epinotum. The dorsum of epinotum is fairly distinctly delimited from the declivity in the ♀ major, but in the ♀ minor the declivity has a rounded brow and merges gradually into the dorsum. The petiole is not notably different from that of *rotundatus*. The 1st segment of the abdomen is one-third longer than the remaining segments taken together. The legs are shorter and stouter than in *rotundatus* or *eugeniae*. The 1st tarsal joint of the hind legs only three-fifths the length of the tibia.

Bulawayo; not common. Makapan. (Simon.)

(S.A.M., R.M., G.A. colls.)

Var. NATALENSIS, Forel.

In Emery, Bull. Soc. Ent. Ital., vol. 33, p. 49, ♀, 1901.

“♀. 2-2.8 mm. Differs from the type by the colour of the head and thorax, which is brownish yellow and even rusty brown in the larger individuals. In the latter and ♀ media, the thorax is shallowly compressed, hardly so at all in the ♀ minima. Quite distinct from *A. rixator* by the triangular mandibles and the declivity of the epinotum, which is not marginate. The ventral lamella of the 1st joint of the petiole is obtuse, thick, pointing downwards and very distinct. The pilosity is longer.

Natal. (Haviland.)”

A. INCONSPICUUS, Westwood.

Trans. Ent. Soc. London, vol. 4, p. 237, ♂, 1847.

“♂. This insect disagrees in one or two slight respects from Mr. Shuckard's character of *Aenictus*, . . . of these characters the most striking are the slightly opaque whitish wings, with the veins and stigma almost concolorous with the membrane of the wing; the antennae gradually attenuated from the 4th or 5th joint, and the very clavate femora to all the legs. . . . *Nigro cinereus, pubescens, antennis rufo-piceis, apicibus sensim acuminatis, articulo basali nigro; mandibulis longis, acutis, piceo-rufis basi nigris; alis fere translucidis, venis stigmatum fere inconspicuis; pedibus perbrevis, femoribus clavatis, pedunculo abdominis transverso, antice parum angustiori; disco haud canaliculato. Long. corp. lin. 4; expans. alar. lin. 6½.*

Habitat in Africa australe. Drege. (In Mus. W. W. Saunders.)”

Smith gives a rather clumsy illustration of this species in Cat. Hymen. Brit. Mus., vol. 7, plate 2, fig. 15a, which is of very little assistance in completing Westwood's very insufficient description. As far as one may judge by the description and the figure referred to, this insect bears a great resemblance to the species described below as *tuberculatus*, n. sp. I am inclined to suspect that the pale colouration of the nervures and stigma is due to immaturity.

A. TUBERCULATUS, n. sp.

V

♂. 9 mm. Allied to *buttgenbachi*, Forel. Dark ochreous; pronotum except the margins, mesonotum except the portion bordering the median and lateral sulci, scutellum except the extreme posterior portion, dark brown; epinotum, petiole and abdominal segments above, especially the first two, slightly browned; mandibles and antennae ochreous; head black. Scape, basal segments of flagellum, mandibles, front of the head, and the legs, with long pale pilose hairs, which are shortest on the head; the rest of the body without pilosity, but covered with a close adpressed and yellowish pubescence. Head behind the eyes very smooth, shining and impunctate, the rest of the body closely punctured with small shallow punctures; legs shining and sparsely punctured. Head two and a quarter times wider than long; seen from above, it has the shape of a reversed triangle, with the eyes on each side of the base (which is straight), and the apex (*i.e.* the occipital region) broadly rounded. Front of the head below the eyes shallowly concave. The post-orbital dorsal surface is feebly convex, almost flat. The eyes are hemispherical, not large, less than half the length of the sides of the head. The ocelli are not raised, placed forwards just above the vertical face of the head; the distance between the anterior ocellus and the line joining the posterior ocelli, less than its own diameter. Mandibles very long, as long as the distance between the inner margins of the eyes, narrowing towards the apex, which is acute; a slight angle, hardly large enough to be called a tooth, separates the basal from the inner and concave margin. Scape half as long as the mandibles, two and a half times longer than its apical width; flagellum thinning towards its apex, nearly four times longer than the scape, all the joints longer than wide. Pronotum very slightly exposed; mesonotum rounded in front, somewhat flattened behind and above, in the middle, the parapsidal sutures and a median longitudinal sulcus well defined. The scutellum is very round posteriorly. Seen from the side, the face of the epinotum is vertical, slightly concave below.

The petiole is almost three times as wide as long; the lateral margins are considerably raised, so that the dorsal surface of the petiole is strongly concave transversely; it has also a median longitudinal impression. The sides of the petiole are moderately convex. The stipites are broadly truncate and rounded apically, their ventral margins are concave along the apical half; the internal paramera are rounded at the apex, and at about one-third of their length from the apex there is on each side above a flattened and rather spatulate tubercle, directed outwards and slightly backwards; below these, on the ventral margins of the paramera, and nearer the apex, there is a minute, acute triangular tooth on each side. The sub-genital plate is bifurcate, with the arms directed outwards at the apex and fimbriated for about half their length. The femora are round and thin at the base, strongly clavate apically. Wings clear, but slightly browned along the outer margins of the anterior pair, the nervures and stigma black; the wings are long, extending beyond the apex of the abdomen.

The tubercles and teeth on the internal paramera are sufficiently distinctive of this species, which I am inclined to think will eventually prove to be the ♂ of either *eugeniae* or *rotundatus*, the only species which are common in the neighbourhood of Bulawayo.

Habitat, Bulawayo. One specimen taken at light. In my collection.

A. DECOLOR, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 28, p. 668, ♀, 1878.

"Head smooth and without frontal sulcus. The very short declivity is separated from the dorsum of the epinotum by a sharp semicircular ridge. All the joints of the flagellum at least a little longer than wide. The mandibles longitudinally striate, smooth near the masticatory margin. The sides of the meso- and metathorax longitudinally rugose. Rusty red; antennae, abdomen, and legs yellow. Length 3.3 mm."

SUB-FAMILY DOLICHODERINAE.

The members of this sub-family are only likely to be confused with those of the *Camponotinae*, from which they may be distinguished by having the anal orifice transverse, and not circular. The petiole is 1-jointed, and the node, in all our South African species is small and much less conspicuous than in any of the *Camponotinae*. All our species are also very soft-bodied ants, the skeleton being but slightly chitinized.

Characters.

♂. Monomorphic. Frontal area more or less distinct. Antennae 12-jointed, 11-jointed in *Semonius*. Sting rudimentary, except in the Ceylonese genus *Aneuretus*. Middle and hind tibiae with one pectinate calcar, occasionally there is a small outer calcar.

♀. Always winged; like the worker except for the usual sexual differences.

♂. Clypeus prolonged backwards between the frontal carinae. Mandibles as in the ♀, or short and narrow. Antennae 13-jointed, the scape is not longer than the second joint of the flagellum except in *Tapinoma* and *Semonius*.

Nymphs never enclosed in cocoons.

The classification of this sub-family, especially in the definition of the genera, is based largely on internal anatomical characters, such as the structure of the gizzard. As we have only three indigenous genera, including very few species, it has fortunately not been found necessary to burden the description of the genera with these difficult details, which can only be observed with the aid of fine dissections.

All the workers of the *Dolichoderinae* possess anal glands which produce a secretion hardening on exposure to the air, and usually of an unpleasant odour. This secretion is used as a means of protection, since its stickiness serves to clog the limbs of other insects which may attack these ants.

All our species, with the exception of the introduced *Iridomyrmex humilis*, the "Argentine ant," are shy inconspicuous insects, forming only moderate-sized colonies. *Iridomyrmex humilis*, whose original home was probably in Brazil, is an ant which has recently spread through a large part of the globe. Its appearance in South Africa would appear to date from the time of the last Boer War, when it was probably introduced with forage. It is very common all over the Cape Peninsula, and in the neighbourhood of Cape Town it is not only a great pest in houses, but is also the dominant species. Thus on the slopes of Table Mountain very few ants of other species are to be found below the 800–1,000 ft. level, in which area *humilis* is exceedingly plentiful; above that level it is very rare, if not altogether absent, whereas other genera, e.g. *Plagiolepis*, *Ocymyrmex*, *Tetramorium*, are more commonly represented. The astonishing paucity of species and genera at the lower levels of the mountain, and the absence of *I. humilis* in the higher is probably due to two causes, namely, the non-dolichoderine species cannot survive in competition with the Argentine ant, and the latter is unfavourably affected by the climatic conditions of the higher

levels. How far the pest has spread in the South African Region I am not able to say, but the ant has been recorded as far east as Maseru in Basutoland.

The sub-family is divided into 4 tribes, of which only one, *Tapinomini*, Emery, is represented in South Africa.

Key to the Genera of the Tribe TAPINOMINI, Emery.

♂ ♂ and ♀ ♀.

- (2). 1. Antennae 11-jointed *Semonius*, Forel.
- (1). 2. Antennae 12-jointed.
- (4). 3. Scale of petiole distinct; base of abdomen not slanting forwards, not overhanging the petiole *Iridomyrmex*, Mayr (introduced genus).
- (3). 4. Scale of petiole rudimentary, base of abdomen slanting forwards and overhanging the petiole more or less.
- (6). 5. Anal orifice apical; abdomen, when seen from above, with 5th segment visible *Technomyrmex*, Mayr.
- (5). 6. Anal orifice inferior, not apical; 5th segment of abdomen not visible from above *Tapinoma*, Foerster.

♂ ♂

- (2). 1. Anterior wings with 2 closed cubital cells *Technomyrmex*, Mayr.
- (1). 2. Anterior wings with 1 closed cubital cell.
- (4). 3. Scape not longer than the 2nd joint of the flagellum *Iridomyrmex*, Mayr.
- (3). 4. Scape much longer than the 2nd joint of the flagellum.
- (6). 5. Scape as long as the first 3 or 4 joints of the flagellum taken together; or if longer, then the head is wider than long *Tapinoma*, Foerster.
- (5). 6. Scape as long as the first 7 or 8 joints of the flagellum taken together; head not wider than long *Semonius*, Forel.

GENUS IRIDOMYRMEX, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 702, 1862.

Characters.

♂. Monomorphic; petiole with a distinct scale.

♀. Considerably larger than the ♂; the radial cell of the anterior wing is closed, 2 closed cubital cells and 1 discoidal cell.

♂. Scape shorter than the 2nd joint of the flagellum. In our introduced species the mesonotum is very convex and prominent in front, completely hiding the pronotum; the scutellum is also very large and gibbous. (Plate IV., fig. 42.)

I. HUMILIS, Mayr. (Plate IV., figs. 41 and 42.)

(*Hypoclinea*) Ann. Soc. Nat. Modena, vol. 3, p. 164, ♀, 1868. Forel, Verh. Zool. Bot. Ges. Wien, vol. 58, p. 395, ♂, 1908. Newall, Journ. Econ. Entom., vol. 1, p. 28, ♀, 1908.

♀. 3.2-3.5 mm. Brown or blackish brown; legs, antennae and mandibles paler. Whole body covered with an exceedingly fine pale

pubescence, which is longer on the abdomen. Impunctate, subnitidulous. Head somewhat triangular, much wider behind than in front, sides very convex, posterior angles strongly rounded, occipital margin feebly arcuate. Mandibles moderately long, triangular, the basal margin two-thirds as long as the masticatory, the latter with 4 or 5 blunt teeth, and a large and sharp apical tooth. Clypeus feebly convex, the anterior margin slightly depressed and shallowly concave in the middle, posterior margin well defined. Frontal carinae short, flat and divergent behind. The scape reaches back beyond the occipital margin by one-fifth of its own length; flagellum slightly thickened towards the apex, all the joints longer than wide, 1st and 2nd joints sub-equal in length. Eyes large and flat, situated somewhat dorsally in the anterior half of the head. Pronotum narrower than the occipital margin of the head, moderately convex at the sides and above, and as long as wide. Pro-meso and mesoepinotal sutures well defined. Mesonotum longer than wide, and only a little more than half as wide as the pronotum, sloping towards the epinotum, from which it is separated by a wide and deep depression. Dorsum of epinotum distinctly convex transversely and longitudinally, about as long as wide, less than half as long as the mesonotum. The declivity is smooth and shining. The anterior face of the scale of the petiole is slightly convex, the posterior face flat and shining. The scale slants forwards and is widest in the middle, rounded above, and much wider than thick. Abdomen oval, all the segments wider than long. Legs slender.

♀. 6 mm. Dark brown, abdomen almost black, legs, antennae and mandibles paler. Pubescence longer and denser than in the ♂. Head, excluding the mandibles, a little longer than wide, narrower in front of the eyes than behind them, sides less convex than in the ♂. Eyes large, occupying about one-third of the sides of the head; ocelli small, situated near the occipital margin. Pronotum almost completely hidden above by the mesonotum; the latter is very long, twice as long as wide, very convex in front, moderately so at the sides, and flattened posteriorly. The scutellum is about one-third the length of the mesonotum, widest anteriorly, and rounded posteriorly; metanotum very short. The dorsum of the epinotum is twice as long as the metanotum, much wider than long, inclined towards the declivity, which is nearly vertical, but not sharply defined. Seen from the side, the thoracic profile rises gradually in front towards the posterior margin of the scutellum, beyond which it sinks abruptly to the level of the metanotum.

The scale of the petiole is much wider than in the ♂, and not so narrow above. Abdomen oblong. Wings slightly smoky, stigma and nervures dark brown.

♂. 3.8-4.2 mm. Brown, antennae, mandibles and legs pale yellow, a transverse area between the mesonotum and scutellum dirty yellow. Pubescence as in the ♀. The head is shaped like that of the ♀, but the posterior angles are less rounded. The eyes are very large, occupying more than half the sides of the head, their anterior margins being separated from the base of the mandibles by a distance equal to about half the length of the 1st joint of the flagellum. The mandibles are triangular, thin and very small. The antennae are short, filiform, not reaching back to the posterior third of the mesonotum; the scape is flattened, and shorter than the distance separating the two posterior ocelli; the 1st joint of the flagellum is a trifle more than half the length of the scape, the 2nd joint is longest, and two and a third times as long as the 1st. All the joints longer than wide, diminishing in length successively towards the apical joint, which is a little longer than the preceding joint. Pronotum hidden by the mesonotum. The latter is very globose, convex transversely, and as long as wide. The Mayrian and parapsidal furrows but feebly indicated. The scutellum is raised considerably above the level of the mesonotum and epinotum, and is much more convex transversely than in the ♀. The dorsum of the epinotum is much longer than in the ♀, as long as the scutellum and as long as its apical width; the declivity is vertical, with the brow distinctly rounded. The scale of the petiole is much wider than it is high, and more than twice as wide as long. Abdomen ovate, genitalia partially exerted. Legs long and slender. Wings as in the ♀.

Capetown. Maseru, Basutoland; (R. M. Sloley). (S.A.M., R.M., G.A. colls.)

GENUS *TECHNOMYRMEX*, Mayr.

Ann. Mus. Stor. Nat. Genoa, vol. 2, p. 147, 1872.

Characters.

♀. Anal orifice apical.

♀. Not much larger than the ♂. Anterior wings with 1 discoidal and 2 closed cubital cells.

♂. Antennae filiform; scape not longer than the first 2 joints of the flagellum. The cubital vein in the front wing is sometimes broken in the region of the 2nd cubital cell. Mesonotum not pro-

jecting above the pronotum. Petiole nodiform. Genital armature large.

✓
Key to the ♂ ♂ of Technomyrmex.

- (4). 1. Species more or less yellowish.
- (3). 2. Clypeus with the anterior margin deeply excised in the middle.
arnoldinus, Forel.
- (2). 3. Clypeus with the anterior margin only slightly excised.
nigriventris, Santschi, race *albinasis*, Forel.
- (1). 4. Dark brown species *albipes*, Smith, race *Foreli*, Emery.

T. ARNOLDINUS, Forel. (Plate IV., figs. 39, 39a.)

Deutsch. Ent. Zeit. Beiheft, p. 222, ♂, 1913.

♂. 3-3·2 mm. Dirty brownish yellow, legs pale ochreous, apical abdominal segments, and sides of 1st and 2nd segments brown; or thorax, legs and antennae yellowish brown, head pale brown, abdomen wholly dark brown. Head, pronotum, and abdomen smooth and shining, mesonotum, dorsum of epinotum and mesopleura reticulate and rather dull, declivity of epinotum shining and very finely transversely striate. Pubescence pale yellow, scanty on the body, denser on the legs. The pilosity consists of dark, erect and bristly hairs, distributed in a peculiarly symmetrical manner as follows: there are 2 such hairs on the posterior margin of the head, the pronotum has a crescentic row of 6 hairs, parallel with its anterior margin, three on each side, the mesonotum has a pair on each side, and the margin of the declivity of the epinotum has 3 on each side and 1 in the centre. This arrangement of the pilosity is so distinctive in fresh specimens that it would alone serve to distinguish the species from all our other *Dolichoderinae*.

Head about one-quarter longer than wide, the sides moderately convex, the hind angles much rounded, the posterior margin straight. Eyes moderately convex, situated at about the middle of the sides of the head. Clypeus nearly flat, the anterior margin semicircularly and widely excised in the middle. Mandibles smooth, shining and sparsely punctured, the masticatory margin with about 7 small teeth anteriorly, and finely denticulated posteriorly. Scape of antenna reaches back a little beyond the occiput, 3rd-6th joints of the flagellum as wide as long, the rest longer than wide. Pronotum not so wide as the posterior margin of the head, quite one-third wider than long; pro-mesonotal suture distinct; mesonotum distinctly longer than wide, and as long as the pronotum. MesoePINOTAL suture deep. The dorsum of the epinotum much wider than long, crescentic in outline when seen from above, and rising

from the base towards its apical margin when seen from the side ; the declivity is very oblique, widest in its lower half, and two and a half times as long as the dorsum. Petiole long, without a scale, and completely hidden under the abdomen. The latter is oval, rather pointed at the apex, all the segments much wider than long. The darker variety differs only in colour from the type.

Bulawayo, under stones, also in a hollow stem, in shady moist places. Durban ; (C. B. Cooper).

(S.A.M., R.M., G.A. colls.)

T. NIGRIVENTRIS, Santschi, race *ALBINASIS*, Forel.

Santschi, in Forel, Schultze Forschungsreise Süd-Afr., footnote, p. 22, 1910.

Type species.

"♂. 2-2.8 mm. Pale testaceous yellow, the posterior region of the head, and often the shoulders and dorsum of the thorax more or less brownish, abdomen black. The hairs on the thorax are scanty, fairly short and yellow, they are longer and more abundant on the abdomen and around the mouth. The base of these hairs is often blackish. Pubescence fine, yellowish and moderately abundant all over, slightly lessening the shiningness of the abdomen. Head and thorax sub-opaque. The whole body microscopically reticulate-punctate. Mandibles smooth with a few piligerous punctures. Head a little longer than wide, slightly narrowed in front, the posterior angles rounded, the occipital margin feebly emarginate. The eyes are longer than one-fourth of the sides of the head, their anterior margins reaching the level of the antennal sockets. Clypeus with a wide but shallow median longitudinal groove which ends anteriorly in a distinct emargination. Mandibles with about a dozen teeth, diminishing in size from the apical to the basal. The scape reaches beyond the occiput by about the length of the 1st joint of the flagellum, the median joints of the latter a little longer than wide. The meso-metanotum is rounded posteriorly in an even curve as far as the floor of the meso-epinotal suture ; the stigmata of the mesonotum do not project above its profile. The profile of the epinotum almost rectangular, with the dorsum about one-third the length of the declivity ; the latter flat and clearly margined.

Brazzaville, French Congo."

Race ALBINASIS, Forel.

Forel. *loc. cit.* p. 22, 1910.

“♂. 1·7 mm. Smaller than the type species. Eyes a little smaller. Clypeus with the longitudinal groove hardly or not at all terminated by an emargination in front. As in the type, all the joints of the flagellum are at least a little longer than wide, but the rather shorter scape projects backwards beyond the occipital margin by not more than its own thickness. Thorax noticeably shorter. Pronotum with more distinct anterior angles, one and a quarter to one and a third times wider than long. Mesonotum wider than long. The very short dorsum of the epinotum also wider than long (in the type species distinctly longer, and not wider than long). Declivity of epinotum only bluntly margined. At the sides below, the stigmata project out step-like (only slightly so in the type species). Legs a little shorter. The whole body shining and only very faintly reticulate, the thorax a little less shining. Pubescence scantier (it is fairly scanty in the type species). Pilosity equally distributed. Yellowish brown, thorax and 1st abdominal segment lighter, brownish yellow. Antennae, clypeus, mandibles and legs yellowish white.

Table Mountain. (Schultze.)”

T. ALBIPES, Smith, race FORELI, Emery. (Plate IV., fig. 40.)

Journ. Proc. Linn. Soc. Zool., vol. 6, p. 38, ♀, (*Tapinoma*), 1861.

Race, Emery, Ann. Soc. Ent. France, vol. 62, p. 249, ♀, 1893.

Race, Forel, Ann. Soc. Ent. Belg., vol. 54, p. 446, ♀ ♂, 1910.

♂. 2·2–2·5 mm. Dark brown, base and apex of the scape, the flagellum and the mandibles brownish yellow, legs pale yellow or with the tibiae and femora more or less brown. Head and thorax very finely reticulate-punctate, the puncturation is a little larger on the meso- and epinotum, abdomen microscopically rugulose. Whole body covered with a very fine and short whitish pubescence; there are a few pilose hairs, less evenly distributed than in *arnoldinus*. The body sub-nitidulous, mandibles shining. Head a little longer than wide, wider behind than in front, sides convex, posterior margin shallowly arcuate. Clypeus with the anterior margin feebly emarginate in the middle. Mandibles with a few coarse punctures, the masticatory margin armed with numerous small teeth, the apical and sub-apical teeth the largest. The scape reaches back beyond the occipital margin by about the length of the 1st and 2nd joints of the flagellum; 1st joint twice as long as the 2nd, the latter as wide as

long, the rest longer than wide, apical joint as long as the two preceding taken together. Frontal carinae rather wide apart and divergent posteriorly. Eyes comparatively large, situated in the front half of the head. Thorax very similar in shape to *arnoldinus*; pronotum not so wide as the head, and not much wider than long, pro-mesonotal suture distinct. Mesonotum longer than wide, rising from in front towards the middle and thence sloping down to the meso-epinotal suture. Dorsum of epinotum about one-quarter to one-third the length of the declivity; the latter is widest below, rounded above, the lateral margins rounded but fairly distinct. Abdomen less convex transversely above than in *arnoldinus*, and less pointed towards the apex. Petiole oval, widest in the middle, and hidden by the abdomen which overhangs it.

♀. 3.2 mm. The eyes occupy at least one-third of the sides of the head, ocelli small and set far back. Seen from above, the pronotum is almost hidden by the large mesonotum which is as wide as long, convex in front, flat or slightly concave in the middle behind; the scutellum is about half as long as the mesonotum. The dorsum of the epinotum is almost obsolete, and the declivity less oblique than in the ♂, and not so narrow above. Wings very pale, nervures almost colourless, stigma very faintly tinged with yellow. Otherwise resembling the ♂, but the body is a little duller.

♂. 3 mm. Colour of the ♀, legs, antennae and mandibles yellowish, the femora darker except at the apex. Head much wider than long, and wider in front than behind, posterior margin slightly concave. The eyes large, occupying nearly the anterior half of the sides of the head; ocelli larger than in the ♀. Clypeus shorter than in the ♀, more convex transversely, the anterior margin almost straight. Mandibles large, coarsely punctured and shining, the masticatory margin distinctly dentate. The scape is not as long as the long diameter of the eyes, about as long as the 1st and 2nd joints of the flagellum together. Flagellum filiform, densely pubescent, 1st joint as wide as long, the rest longer than wide. The antennae extend back as far as the brow of the epinotum. The thorax is similar to that of the ♀, but the mesonotum is a little wider, and the scutellum shorter and more prominent; the parapsidal sutures well defined. The dorsum of the epinotum is longer and more convex transversely than in the ♀, and the slope of the declivity is less abrupt. The petiole is much rounder and wider above than in the ♂ or ♀. The genital armature is very large, and more or less exerted. Wings as in the ♀.

Bulawayo; common in moist places under stones, etc. Durban. (S.A.M., R.M., G.A. colls.)

GENUS TAPINOMA, Förster.

Hymen. Stud., vol. 1, p. 43, 1850.

Characters.

♀. Anterior margin of clypeus entire or excised, in some species with a deep median longitudinal groove. Mandibles multidentate. Petiole depressed, without a distinct scale; basal segment of abdomen overhangs and more or less hides the petiole. Anal orifice usually inferior.

♀. Usually much larger than the ♂; anterior wings with only 1 closed cubital and 1 discoidal cell.

♂. As a rule smaller than the ♀. Mandibles generally well developed. Antennae filiform, scape long, usually as long as the first 3 joints of the flagellum taken together, 1st joint not much shorter than the 2nd. Pronotum not hidden by the mesonotum when seen from above. Petiole nodiform. Genital armature large. Wings as in the ♀.

Key to the ♂ ♀ of Tapinoma.

- (2). 1. Clypeus with a deep and abrupt median excision of the anterior margin, as deep as half the length of the clypeus
Voeltzkowi, Forel, var. *Rhodesiae*, Forel.
- (1). 2. Clypeus with anterior margin shallowly emarginate.
- (4). 3. Dorsal profile of thorax almost horizontal *gracilis*, Forel.
- (3). 4. Dorsal profile of thorax distinctly convex.
- (6). 5. All the joints of the flagellum longer than wide, yellow species, 2·7–3 mm.
luteum, Emery.
- (5). 6. Second to 9th joints of the flagellum wider than long, brownish species, 1·6 mm. *Arnoldi*, Forel.

T. LUTEUM, Emery.

Ann. Soc. Ent. France, vol. 63, p. 43, ♀, 1895.

“♀. 2 mm. Pale flavous, dull, with very fine and pale pubescence, erect hairs only on the clypeus and mandibles. Head a little longer than wide; clypeus widely emarginate in the middle. The scape extends beyond the occipital margin by about one-quarter of its own length; declivity of epinotum more than twice as long as the dorsum. Makapan (Simon).”

Race EMERYI, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 477, ♀ ♂, 1910.

♀. 2·7–3 mm. Flavous, posterior region of the head and posterior segments of the abdomen more or less brownish yellow. Sub-opaque, the sides of the thorax slightly shining, microscopically rugulose.

Pubescence whitish, very fine and short. Pilose hairs absent. Very similar to *Technomyrmex albipes*, but differing in the following structural characters.

The head is proportionately wider, and is longer than wide; the frontal carinae are shorter and less divergent posteriorly, the scape is relatively longer. The mesonotum is not highest in the middle as in *albipes*, but at its anterior margin, sloping thence in a gradual curve to the meso-epinotal suture. The dorsum of the epinotum is longer and narrower than in *albipes*, being longer than it is wide below, whereas in *albipes* it is quite as wide below as it is long. The petiole is shorter and narrower. The abdomen widens towards the apex. The eyes are also larger, and the clypeus only feebly sinuate in the middle of the anterior margin.

♀. 4.8 mm. (Hitherto undescribed.) Considerably larger than the ♂. Head and abdomen dark brown, clypeus paler. Thorax brownish yellow, prothorax and tegulae a little darker, legs and antennae ochreous. Pubescence and puncturation as in the ♀. Head as wide as long, posterior margin straight. Eyes situated in the anterior half of the head, and occupying about one-quarter of the sides of the same. Thorax nearly as wide as the head. Pronotum exposed, mesonotum slightly rounded at the sides and in front, flat above, as long as wide, 4 times as long as the pronotum. Scutellum wider than long. Epinotum very little narrower than the scutellum; the dorsum is not sharply delimited from the declivity but merges into it gradually. The declivity is not so steep as in the ♂. The abdomen is nearly as long as the head and thorax together. The 1st segment is nearly twice as long as the 2nd, and one-third wider than long. There are a few black erect hairs on the 3rd and 4th segments, and some paler ones on the clypeus.

“ ♂. 4.7 mm. Head and thorax rusty brown; abdomen brown. Legs and mandibles yellowish. Otherwise like the ♀. Wings slightly tinged with brown, with a single cubital and a single closed radial cell.”

The ♂♂ which I have taken here with the ♀♀, do not attain to this size, being 3 mm. long. The scape is as long as the first 4 joints of the flagellum, and extends back just a little beyond the occipital margin. The ♂ of this species is very similar to that of *Technomyrmex albipes*, but is smaller and differs in the following details.

The head is longer than wide, the posterior angles more prominent. The antennae are longer, extending back as far as the base of the 2nd abdominal segment. The 1st joint of the flagellum

is one-quarter longer than wide, all the other joints at least twice as long as wide. The mesonotum is much more convex and the scutellum posteriorly is also more convex and higher. The epinotum resembles that of the ♀. The legs are long and slender.

The ♂ of the race differs from the type species in its larger size, stronger and denser puncturation, slightly shorter scape and duller surface.

Bulawayo; common. (S.A.M., R.M., G.A. colls.)

T. ARNOLDI, Forel. (Plate IV., fig. 44.)

Ann. Soc. Ent. Belg., vol. 57, p. 139, ♂, 1913.

♂. 1.6-1.7 mm. Light brown, anterior portion of the head, scape, 1st joint of the flagellum, mandibles, tarsi, articulations of the legs and the petiole, yellowish. Moderately shining and almost impunctate. A very fine pubescence on the whole body and legs. Pilose hairs absent except on the clypeus. Head very little longer than wide, rectangular, sides feebly convex, angles rounded, posterior margin almost straight. Eyes situated within the anterior third of the sides of the head. Clypeus wider than long, shallowly but widely emarginate on the anterior border. Mandibles shining and feebly punctured, masticatory margin with a few small teeth, the apical tooth larger and more acute. The scape does not reach back as far as the occipital margin; the flagellum is thickened towards the apex, the 1st joint as long as the 2nd, 3rd and 4th taken together, apical joint as long as the 3 preceding joints together, 2nd-9th joints wider than long. Pro-meso, and meso-epinotal sutures moderately distinct. Pronotum wider than the rest of the thorax, and a little wider than long; mesonotum almost as long as the pronotum; dorsum of epinotum wider than long, only half as long as the mesonotum, the declivity oblique, longer than the dorsum, widest below, its brow rounded. Petiole longer than wide, flattened dorso-ventrally. Abdomen oval, all the segments much wider than long.

♀. 2.7 mm. (Hitherto undescribed.) Dark brown, tarsi pale yellow, articulations of the legs, base of the scape, mandibles and anterior angles of the head brownish yellow. The sides and the posterior margin of the head are straight, the posterior angles rounded. Eyes large, ocelli small and set close to the posterior margin. Pronotum very short, mesonotum large and moderately convex, as wide as long and as long as the distance from the antennal sockets to the posterior margin of the head; scutellum wider than long, two-fifths as long as the mesonotum; epinotum

wider than long, curving very gradually from base to apex so that the dorsal and declivous portions cannot be distinctly defined. Abdomen oblong, as long as the head and thorax together. Other characters as in the ♀.

♂. 1.7 mm. (Hitherto undescribed.) Brownish black, front of head, epinotum and last 3 segments more or less flavous, mandibles, tibiae and femora fuscous, tarsi pale yellow. Pubescence microscopic, the whole body shining and impunctate. Head narrowing towards the occiput, widest across the eyes, one-third wider than long; eyes large, occupying nearly the anterior half of the sides of the head; ocelli on a slightly raised area, not very large. Clypeus shorter than in the ♀, otherwise similar. Mandibles well developed, with a sharp apical tooth, the masticatory margin minutely denticulate. Scape just reaching the occiput, as long as the first 6 joints of the flagellum, all the joints of the latter, except the 2nd, longer than wide, the 2nd as long as wide, the 1st joint half as long again as the 2nd. Pronotum not exposed; mesonotum one-third wider than long, Mayrian furrows obsolete, parapsidal sutures well defined; scutellum less than half as long as the mesonotum, and as wide as long. Epinotum widest at the base and as long as wide at the base. Abdomen ovate, all the segments much wider than long. Genital armature exerted. Wings slightly tinged with yellow, nervures very pale, stigma faintly fuscous.

Bulawayo, in a hollow stem of an *Acacia*. Plumtree, S. Rhodesia, in a hollow gall. Small nests, containing about 30 individuals.

Type of ♀ and ♂ in my collection. (S.A.M., R.M., G.A. colls.)

T. VOELTZKOWI, Forel, var. RHODESIAE, Forel. (Plate IV., fig. 43.)
Voeltzkow's *Reise Ost Afrika*, vol. 2, p. 84, ♀, 1907. (Variety) *Ann. Soc. Ent. Belg.*, vol. 57, p. 139, ♀, 1913.

♀. 2.5-3 mm. Black, clypeus, femora and scape brown, mandibles, flagellum brownish yellow, tibiae, tarsi, coxae and base and apex of femora pale straw-yellow. A very short and inconspicuous pale pubescence all over, and a few long pilose hairs on the clypeus and mandibles. Head shallowly but closely reticulate. Thorax shallowly reticulate-punctate, the puncturation being strongest on the mesonotum. Body slightly shining, the mesonotum and epinotum duller than the rest. Head a trifle longer than wide, the sides convex, the posterior margin moderately concave, the posterior angles strongly rounded. Eyes large, situated just in front of the middle of the sides of the head. Frontal carinae flat, linear and

sub-parallel. Clypeus with a deep and abrupt emargination in the middle anteriorly, which extends quite half the length of the clypeus, and is deeper than wide. Mandibles triangular, widest at the base, shining and sparsely punctured, masticatory margin with about 8 acute teeth, the apical the longest. The scape reaches back beyond the occipital margin by less than the length of the eye. Flagellum one-third longer than the scape, all the joints longer than wide. The thoracic sutures well defined, the posterior rather deep. Pronotum wider than long, rounded in front, the sides very convex, the dorsum moderately so. Mesonotum longer than wide, as long as the pronotum. Dorsum of epinotum wider than long, rising gradually from the suture towards the brow of the declivity, the latter sloping obliquely, longer than the dorsum and with the brow angular. Petiole flattened, longer than wide, widest in front of the middle and pointed at its base. Abdomen ovate. This variety differs from the type only in having the head a little wider behind, in the less convex sides, and the slightly longer scapes.

Bulawayo, nesting in grassy soil; not common.

(S.A.M., R.M., G.A. colls.)

T. GRACILIS, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 140, ♀, 1913.

♀. 2 mm. Ochreous; apex of abdomen, flagellum and posterior tibiae and femora brownish. Sub-opaque (Forel says "densely punctured"; if so, the punctures are too small to be resolved even under a magnification of 65 diameters). Pubescence short, decumbent and yellowish. Pilose hairs absent. Head almost quadrate and rather flat, not more than one-sixth longer than wide, sides nearly straight, posterior margin straight, hind angles widely rounded. Eyes large, situated more dorsally than laterally, a little in front of the middle of the head. Clypeus three times as wide as long, anterior margin with a shallow median emargination. Frontal carinae closer to each other than they are to the eyes. Mandibles smooth, narrow, largely hidden under the clypeus, and with about 4 or 5 teeth. The scape extends back beyond the occipital margin by one-third of its length; the 2nd joint of the flagellum two and a quarter times longer than wide, nearly as long as the 1st. Thorax narrow, elongate, with the dorsal profile nearly horizontal, therein differing markedly from our other two species. The pronotum is a little wider than long, mesonotum two-thirds as long as the pronotum. The dorsum and declivity of the epinotum of equal length; the declivity is very oblique, sloping

but slightly below the level of the dorsum, from which it is not clearly delimited. Petiole flattened as in the other species, but more parallel-sided. Legs very long.

Matetsi, near the Victoria Falls. The nest of this species is placed in rather loose sandy soil. It is a very quick and erratic ant, and, owing to its colour, difficult to distinguish from the ground which it frequents.

(G.A. coll.)

GENUS SEMONIUS, Forel.

Schultze' Reise im west. und zentral Südafrika, Formicidae, p. 21, 1910.

Characters.

♂. Clypeus entire. Antennae 11-jointed, flagellum strongly incrassate, almost clavate. Anal orifice inferior.

♀. Much larger than the ♂. Head very elongate, much longer than wide. Wings with 1 closed cubital and 1 radial cell.

♂. Scape half as long as the flagellum. Mandibles well developed. Pronotum not exposed. Genital armature exerted. Smaller than the ♀. Wings as in the ♀.

S. SCHULTZEI, Forel. (Plate IV., fig. 45.)

Loc. cit. p. 21, ♂. Santschi, Voy. d'Alluaud and Jeannel, p. 120, ♂, 1914.

♂. 1.8-2 mm. Black or brownish, dull or only very slightly shining. Pubescence greyish, dense and microscopic; a few pilose hairs on the clypeus. Microscopically and closely punctured. Head one-fifth longer than wide, the sides moderately convex, the hind angles strongly rounded, the posterior margin almost straight. The anterior margin of the clypeus is straight or nearly so. The frontal carinae rounded, very short, nearer to the eyes than they are to each other. Eyes moderately large, flat, situated in front of the middle. Mandibles smooth and shining, with a few small punctures, feebly dentate. The scape reaches back as far as the posterior fourth of the head; all the joints of the flagellum, except the 1st and last, wider than long, the last three joints form a slight club. Thorax shorter and much narrower than the head, distinctly convex longitudinally. Thoracic sutures distinct. Pronotum one-third wider than long, sloping steeply in its anterior half. Mesonotum wider in front than behind, one-third wider than long. The dorsum of the epinotum is as wide as the mesonotum, and is not clearly delimited

from the very oblique declivity; the whole epinotum is a little longer than the mesonotum. Petiole flattened, acuminate at the base, widest below the middle. Abdomen ovate, overhanging the petiole. Legs short, all the femora rather broad.

♀. 3.5 mm. (Hitherto undescribed.) Black; head and thorax very smooth and shining, very sparsely pubescent. The pubescence very fine and short, arising on the head from microscopic punctures; thorax impunctate. Abdomen dull, and similar to that of the ♂, but larger. Tibiae and femora shining. Head, excluding the mandibles, two and one-fifth as long as wide, parallel-sided, somewhat flat above, the posterior angles rounded, the posterior margin straight. Eyes moderately large, situated within the anterior third of the head; ocelli small, set rather far back. Antennae 11-jointed; the length of the scape is less than the width of the head, the flagellum about one-third longer than the scape. Clypeus convex in the middle, the anterior border feebly emarginate in the middle. Mandibles sparsely but rather strongly punctured, elongate, the external margin twice as long as the masticatory, which is furnished with numerous small teeth and a large apical tooth. Pronotum very convex transversely in front, and sloping steeply downwards towards the neck from the level of the pro-mesonotal suture. Mesonotum flattened, about as long as wide; scutellum less than half as long as the mesonotum; epinotum one and a half times wider than long, the brow of the very short and vertical declivity is polished and shining. Wings with a yellowish tint, nervures ochreous, 1 closed cubital and 1 radial cell.

This sex differs remarkably from the ♂, particularly in the shape of the head, so much so that if it had not been taken with the ♀♀ and ♂♂ in large numbers in the same nest it might reasonably have been ascribed to a different genus.

♂. 2.1 mm. Black; mandibles, antennae, and legs brownish. Shining and impunctate, the pubescence very short and sparse. Head as long as wide between the eyes, where it is widest; distinctly narrowed in front of the eyes and contracting towards the hind margin. Mandibles about half as long as the head, similar to those of the ♀. The scape does not reach the occipital margin, it is half as long as the flagellum. Eyes large, situated just within the anterior half of the head, occupying about one-quarter of the sides. Ocelli small, hardly raised. There is a short median longitudinal impression between the posterior margin of the clypeus and the anterior ocellus. Clypeus rounded and raised in the middle, the anterior margin feebly convex. Seen from above, the pronotum is

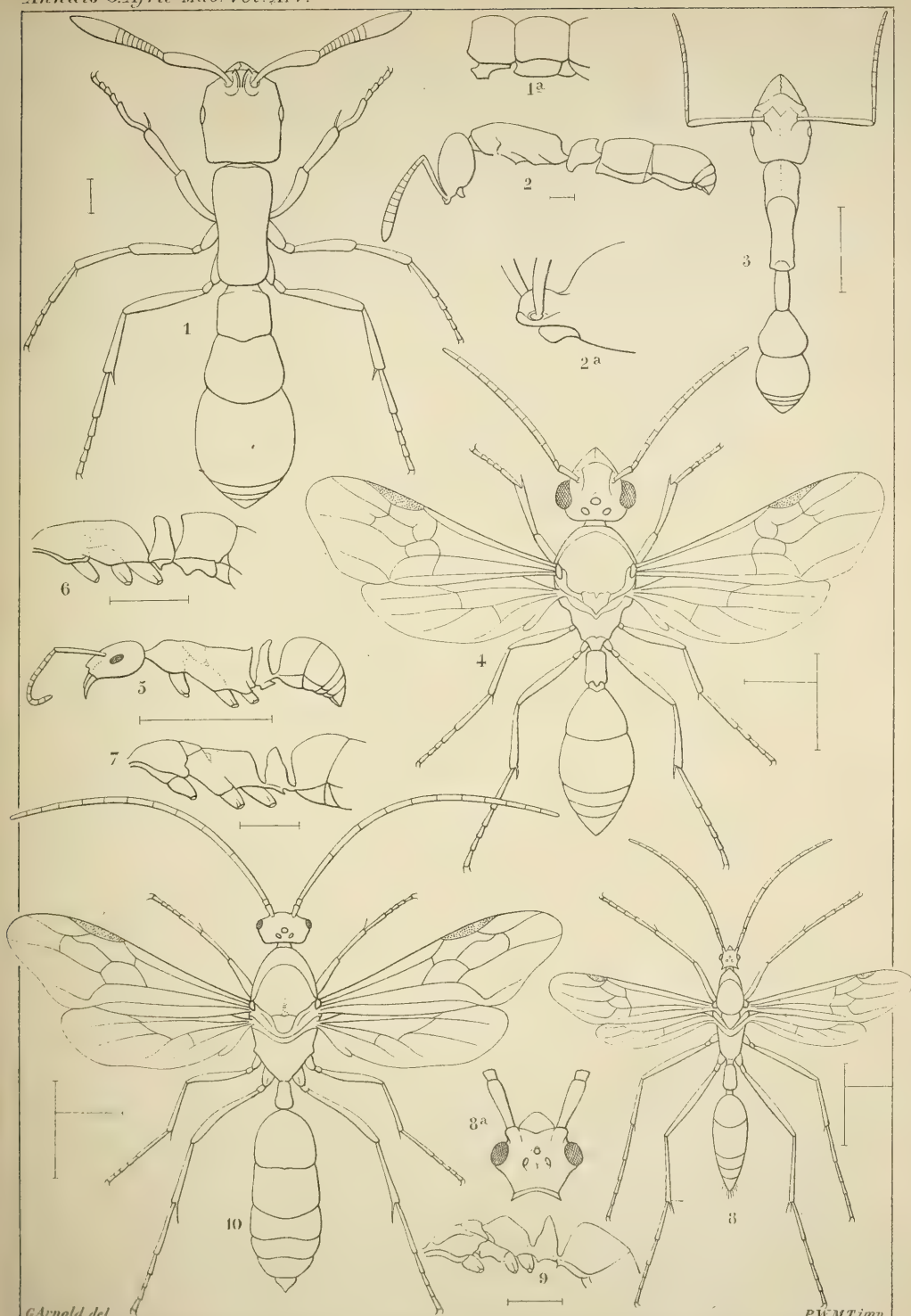
entirely hidden by the mesonotum. The latter is similar to that of the ♀, but less flattened and with the parapsidal sutures more distinct. The scutellum is narrower and more convex posteriorly, and raised higher above the level of the epinotum. The latter is very smooth and shining, the dorsum wider than long, and merging gradually into the declivity. Genital armature exerted. Wings as in the ♀.

The above description differs in some respects from that given by Santschi, which was drawn up from a single specimen in a damaged condition. There can be no doubt as to the correct identity of the numerous specimens of ♂♂ on which the above description is based, since they were taken in the same nest with the ♀ and ♀.

S. Rhodesia; fairly common. Kalahari. (Schultze.) Durban. (Marley.)

This is a timid and quick ant, living on trees and nesting under the bark. When disturbed, it emits from the anal glands a white sticky fluid, which hardens on exposure to the air.

(S.A.M., R.M., G.A. colls.)



C. Arnold del.

P. W. M. Timp

1 *Cerapachys Peringueyi* Emery ♀ × 16.1a - do - node & 1st abdom. segment.2 *Probolomyrmex filiformis* Mayr. ♀ × 16.

2a - do - anterior region of head.

3 *Platythyrea lamellosa* Roger ♂ × 4 (race *rhodesiana* Forel)4 *Platythyrea cribrinodis* Gerst. ♂ × 4.5 *Streblognathus aethiopicus* Smith. ♀ × 2.6 *Paltothyreus tarsatus* F. ♂ × 3.7 *Megaponera foetens* F. ♀ × 4.

8 & 8a - do - ♂ × 3 & head × 8.

9 *M. (Hagensia) Havilandi* Forel. ♀ × 4.10 *Paltothyreus tarsatus* F. ♂ × 4.

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Curator of the Rhodesia Museum, Bulawayo, pp. 159–270.
(Plates II–IV.)



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A Monograph of the Formicidae of South Africa.

entirely hidden by the mesonotum. The latter is similar to that of the ♀, but less flattened and with the parapsidal sutures more distinct. The scutellum is narrower and more convex posteriorly, and raised higher above the level of the epinotum. The latter is very smooth and shining, the dorsum wider than long, and merging gradually into the declivity. Genital armature exerted. Wings as in the ♀.

The above description differs in some respects from that given by Santschi, which was drawn up from a single specimen in a damaged condition. There can be no doubt as to the correct identity of the numerous specimens of ♂ ♂ on which the above description is based, since they were taken in the same nest with the ♂ and ♀.

S. Rhodesia; fairly common. Kalahari. (Schultze.) Durban. (Marley.)

This is a timid and quick ant, living on trees and nesting under the bark. When disturbed, it emits from the anal glands a white sticky fluid, which hardens on exposure to the air.

(S.A.M., R.M., G.A. colls.)

TRIBE PROCERATIINI.*

GENUS DISCOTHYREA, Roger.

Berl. Ent. Zeitschr., vol. 7, p. 176, 1863. Emery, Ann. Soc. Ent. Belg., vol. 45, p. 51, 1901.

Characters.

♂. Antennae 9-jointed, the scape strongly incrassate apically, the flagellum clavate, the last joint nearly as long as the remaining joints taken together. Mandibles edentate. Clypeus fused with the frontal carinae and the cheeks, forming a semi-circular disc in front of the antennae and projecting over the mandibles. On this disc, the frontal carinae are fused together, to form a single lamella at the level of the antennal sockets, but more or less free behind that point. Eyes small or very small. Thoracic sutures absent. The declivity of the epinotum marginate and excavated. Petiole bell-shaped or thickly squamiform; 1st segment of abdomen not very large, separated from the 2nd by a feeble constriction. Abdomen anteflexed, the apical segments curved downwards and forwards under the 2nd segment as in *Proceratium*.

♀. Winged. Eyes and ocelli well developed. Pronotum exposed above only at the sides. Otherwise like the ♂.

* Page 33.

♂. Antennae 13-jointed. Clypeus, frontal carinae, mandibles, petiole, and abdomen more or less like those of the ♀. Mayrian furrows present. Subgenital plate rounded. Wings with one closed cubital cell; no discoidal cell.

Nymphs without cocoons in *D. oculata*, Emery.

Distribution. North America and the tropical regions of both hemispheres.

This genus can be distinguished from *Sysphincta* and *Probolomyrmex*, and also from the new genus described further on, by the 9-jointed antennae.

D. HEWITTI, n. sp.

♀. 2.2 mm. Reddish ochreous, the occipital margin of the head, the thorax and petiole darker or more brownish red. Dull, microscopically coriaceous-punctate; 2nd abdominal segment slightly shining and fairly smooth. Clothed with a fairly dense but exceedingly fine and short pubescence. Head very convex in its posterior half, one-fifth longer than wide, wider behind than in front, the sides feebly convex, the posterior margin straight or slightly concave. Clypeus of the shape usual to the genus, being produced in front into a horizontal shelf, hiding the mandibles, the anterior margin convex. Frontal carinae fused into a single triangular plate, the front edge of which is perpendicular to the plane of the clypeus and feebly convex, the dorsal edge (when seen from the side) straight and horizontal, not extending beyond the anterior fifth of the head. Mandibles triangular, with a sharp tooth at the apex. Eyes large, convex, placed a little in front of the middle of the sides; ocelli small, placed at the angles of an equilateral triangle. Antennae 9-jointed, the scape strongly dilated apically, its apical width being nearly one-third of its length. First joint of flagellum as long as wide, 2nd—6th joints much wider than long, the apical joint ovoid, pointed, twice as long as wide, longer than the rest of the flagellum. Pronotum widely exposed above at the sides, very little in the middle, the anterior angles rounded, the sides parallel. Mesonotum moderately convex above, longer than wide, the scutellum convex behind. Dorsum of epinotum very short, almost parallel-sided, or only very slightly narrowed towards the apex, the apical margin or brow of the declivity blackish, nearly straight, the lateral corners rectangular but not dentate; the declivity vertical, submarginate. Petiole nodiform, transverse, twice as wide as long, feebly convex above, sharply truncate in front, the anterior face vertical; the ventral lamella produced in front into an oblong and

rectangular lobe, which is longer than deep. First segment of abdomen campaniform, as long as wide at the apical margin, where it is widest; 2nd segment a little longer than the 1st, the remaining segments entirely hidden under the 2nd and reflexed underneath it, so that the apex of the abdomen is directed forwards. Deälated.

Grahamstown (Hewitt), 2 specimens. Type in the Albany Museum, Grahamstown.

Very closely allied to *Traegaordhi*, but in the absence of the ♂ sex, it is not advisable to unite it with that species, from which it differs by the shorter plate of the frontal carinae and by the narrower petiole.

Amongst some ants recently sent to me for determination by the South African Museum, there was a specimen of a Proceratiine ant mounted on the same card with some *Monomorium* sp. — ?, and taken at Kimberley by Brother Power. For the reception of this peculiar insect, which combines in itself some of the characters of all the other genera of the tribe, it will be necessary to erect a new genus, as follows.

GENUS PSEUDOSYSPHINCTA, g.n.

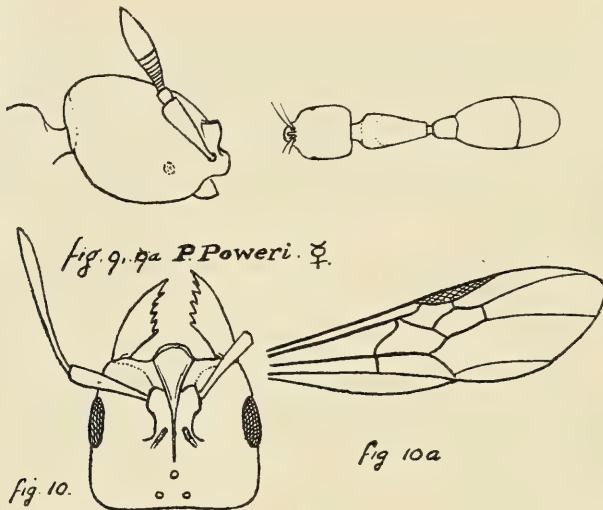
Characters.

♀. Antennae 12-jointed, the scape strongly incrassate apically, more than half as long as the flagellum; 1st joint of flagellum as long as wide, the apical joint very large, acuminate ovate, as long as the rest of the flagellum, all the other joints at least three times wider than long, 2nd and 3rd joints almost fused. Clypeus produced forwards into a horizontal lamella with a convex anterior margin, projecting over the mandibles, which are almost entirely hidden under it, as in *Discothyrea*. Eyes present, not very small. Mandibles triangular, the masticatory margin concave. Thorax narrowed posteriorly; seen from above it forms an elongate triangle, the truncate apex of which is at the brow of the declivity. It is not so elongate as in *Probolomyrmex*, being somewhat intermediate between that and *Sysphincta*. Promesonotal suture faintly indicated, the meso-epinotal absent. Petiole nodiform, articulating only over its lower half with the 1st abdominal segment. Abdomen as in *Discothyrea* and *Sysphincta*, the apical segments being hidden under the 2nd, and ante-flexed. Middle and hind tibiae with one calcar.

Type of genus *P. Poweri*, described below.

P. POWERI, n. sp. (See Text-figures 9, 9a.)

♀, 2. 1 mm. Yellowish rusty red, the legs and antennae paler, more ochreous. Microscopically coriaceous, the 1st abdominal segment also faintly and transversely rugulose. Dull, the 2nd abdominal segment with a slight gloss. Head as long as wide, very convex above, hardly narrowed in front, the sides feebly convex, the posterior margin straight. The single lamella formed by the fused frontal carinae is short, not passing the anterior fifth of the head. Eyes flat, composed



G. (subg. Leptopone) rufipaster. ♀

FIGS. 9, 9a. FIGS. 10, 10a.

of several ill-defined facets (9 ♀), and situated at the anterior third of the head. Scape extending to the middle of the head. Anterior margin of clypeus convex. Pronotum produced in front into a distinct neck, the anterior angles rounded; the pronotum has a short and steep face in front, which is rounded above at its junction with the surface of the dorsum. Thorax nearly twice as long as it is wide across the pronotal angles, where it is widest; the dorsal profile forms a very low curve, sloping towards the declivity. The latter nearly vertical, fairly sharply delimited from the dorsum, faintly submargined. Epinotal angles rounded. Petiole a little wider behind than in front, a little wider than long, the anterior angles rounded, the anterior face straight; the ventral lamella with a broad tooth near its base, pointing

downwards and slightly forwards. First abdominal segment about as long as wide, decidedly longer than the 2nd; the constriction between them moderate. Legs fairly long. Other characters as for genus.

Kimberley. (Power.) Type in my coll.

TRIBE PONERINI.*

GENUS GLYPHOPONE, Forel.

Rev. Zool. Afric., vol. 2, p. 308, 1913.

SUB-GENUS LEPTOPONE, s-g. n.

Characters.

♀. Mandibles triangular, with 6 strong teeth. Clypeus with the median area moderately raised, convex, and slightly produced in front (nothing like so much as in *Paltothyreus*), the lateral margins of the median area tumid, hardly carinate, the space between almost flat or only very shallowly concave, not deeply excavated as in *Glyphopone*, s. str. The clypeus is produced backwards between the frontal carinae, and is confluent with the frontal sulcus, which extends almost to the anterior ocellus. Antennae 12-jointed, the scape widening towards the apex, strongly compressed or flattened along its whole length. Abdomen elongate, as long as the head and thorax. Wings with 2 closed cubital cells, 2 discoidal and 1 submedian (in the type of the genus there are 3 cubital, 2 discoidal and 2 submedian, one of the latter very small). Tibiae and metatarsi of middle pair of legs, and the metatarsi of the hind pair of legs furnished with rows of spines. All the femora compressed laterally, the anterior femora strongly so. Middle and hind tibiae with two strong calcaria, the inner pectinate. Claws simple.

Type of sub-genus, *L. rufigaster*, described below.

G. (SUB-GENUS LEPTOPONE) RUFIGASTER, sp. n. (See Text-figs. 10, 10a.)

♀. 14 mm. Head black, slightly castaneous on the clypeus; thorax black, petiole dark reddish brown, abdomen castaneous red. Legs, scapes, and mandibles castaneous, the margins of the latter blackish, flagellum dark brownish red, the apical joint paler. Smooth and very shining. Exceedingly sparsely and finely punctured, the piligerous

punctures larger than the others; the extreme anterior margin of the mesonotum finely and rather closely punctured. Pilosity very sparse, consisting of stout, suberect, yellowish hairs, fairly long on the pronotum and abdomen, shorter elsewhere. A very scanty pubescence on the legs and antennae. Head, excluding the mandibles, as long as wide behind, wider behind than in front, posterior margin very shallowly concave, the angles rounded. Eyes large, not very convex, placed in the middle of the sides, ocelli present. An oblique and shallow groove or elongate fovea lies on the inner border of each frontal carinae, along the posterior half. First joint of flagellum as long as wide, 2nd—9th joints wider than long, 10th about as long as wide, the apical joint twice as long as wide, as long as the 9th and 10th together. Pronotum widely exposed above, convex transversely and lengthwise; mesonotum moderately convex, the parapsidal sutures feeble. Scutellum trapezoid, its posterior margin convex, sloping downwards posteriorly and hardly raised above the level of the metanotum; the latter rather long, quite one-quarter the length of the scutellum. Epinotum sloping from its base downwards, merging into the declivity by a deep curve, wider than long, shorter than the declivity, the latter convex transversely and vertical. Petiole twice as wide as long, wider above than below, the dorsal surface moderately convex transversely and lengthwise; the anterior face vertical, concave dorso-ventrally and convex transversely; posterior face very steep or almost vertical; ventral lamella produced into a large triangular tooth. Base of abdomen subtruncate, slanting a little forwards (as also the petiole). Abdomen elongate, cylindrical, parallel-sided, two and four-fifths longer than wide, the constriction between the 1st and 2nd segments feeble. Wings dirty yellowish, nervures dark brown, stigma black. Other characters as for the sub-genus.

Victoria Falls. Type in my collection.

I retain this species under the genus *Glyphopone*, since it appears to me that its points of resemblance with that genus (metatarsal and tibial spines, the polished integument, and structure of the node) are of greater value than the points of difference.

SUB-FAMILY MYRMICINAE, Mayr.

Ver. Zool. Bot. Ges. Wien, vol. 5, p. 299, 1855.

Characters.

Petiole 2-jointed in all the sexes; very rarely (*Melissotarsus*) the 2nd joint is nearly as wide as the 1st abdominal segment. Pupae not enclosed in cocoons.

♀. The frontal carinae are nearly always separated, rarely close together, divergent or slightly convergent behind and rarely lobed anteriorly.

♀. Usually winged; not often ergatoid, generally larger than the ♀.

♂. Anal segment with cerci; armature usually partly exerted. In a few species ergatoid and apterous.

This sub-family is the largest of the five, comprising for South Africa alone nearly 300 species, races, and varieties. Its classification is attended with considerable difficulty, not only in the higher ranks, but also often within the limits of the genera. If in some genera, *e. g.* *Monomorium*, *Cremastogaster*, we make a visual examination of a series of forms which have been described as distinct, it may not be difficult to perceive the individuality of each form or of each of the links, sometimes very numerous, which connect up the extremes of one or more species. That which enables us to appreciate the distinctive character in such a case, is the sum total produced by a combination of characters, often very slight, in the colour, punctuation, gloss, and size of the insect. But although more or less readily perceptible to the eye, the specific distinction of each form is far less easily defined in words by the very reason of its composite nature. This statement applies more particularly to the construction of analytical keys having the succinct character which such aids to rapid determination should possess. It is therefore essential that the student should give careful attention to the remarks made on the general structural features in the introductory paragraph to each genus, since the characters used in the key are considered in direct relation to the general morphology exhibited by the genus or by the majority of its members.

A far greater range of variation in habits and structure is shown in this sub-family than in any of the others. The majority of the species are mainly carnivorous, but there are some genera which are graminivorous. Nearly all have a partiality for sugary substances, and many tend aphides for the sake of the honey-dew excreted by those insects. The tribe Attini of the New World is perhaps one of the most remarkable of all, since it comprises the "leaf-cutting" or "fungus-growing" ants, species which feed exclusively on fungi cultivated in their nests. It is also to be noted that a very large number of myrmecophilous insects are found in the nests of Myrmicine ants.

I have endeavoured to give with the descriptions of the species those facts concerning their habits which have so far been ascertained, but it must be admitted that such are painfully meagre, when not

altogether absent. There is, therefore, in this sub-family, as, indeed, is the case with the whole family, a large and magnificent field for patient work and observation, whereby a rich harvest may be reaped by naturalists in South Africa. The use of monographs should not be merely to aid the collector to identify the specimens in his cabinet, but more especially to enable the field-naturalist to study the living animal, and to assign his observations correctly to those species on which they are made, so that such data may be definitely recorded for reference and study by others.

The scheme of classification herewith adopted for the tribes is that which has recently been proposed by Prof. C. Emery, in a paper entitled "Intorno alla classificazione dei Myrmicinae" (Rendiconto d. Sess. R. Acad. d. Scienze d. Inst. Bologna, January, 1914), and the following key has been adapted for the tribes found in South Africa, from the key published by him in those pages. Owing to the fact that this work is being published from time to time in parts, and to the lengthy study required by the tribe Pheidolini, I have not found it practicable to treat of the tribes in the order in which they appear in this key. This is, I believe, not a point of much importance, since in the present state of our knowledge it is not possible to make any definite assertions as to the phylogenetic relationship of one tribe to another.

Key to the Tribes of Myrmicinae found in South Africa.

SECTION I. PROMYRMICINAE, Emery.

Clypeus not prolonged backwards between the frontal carinae, its posterior margin rounded; inner calcaria of middle and hind tibiae pectiniform; ocelli almost always present in the ♀.

Antennae 12-jointed in the ♀ and ♀, 13-jointed in the ♂, anterior wings with two closed cubital cells *Pseudomyrmini*, Forel.

SECTION II. EUMYRMICINAE, Emery.

Clypeus almost always prolonged backwards between the frontal carinae; if not, then the calcaria of the middle and hind tibiae are simple or absent; in the ordinary ♀ the ocelli are not developed, in strongly dimorphic species they may be more or less visible in the ♀ major or 2.

A. All the calcaria pectiniform (not South African).

Myrmicini, F. Smith, Emery emend.

AA. Calcaria of the middle and hind tibiae simple or absent.

B. Anterior wings with two closed cubital cells (except in some extra-South African genera); antennae 12-jointed in the ♀ and ♀, 13-jointed in the ♂ (except in a small number of *Pheidole* and extra-South African genera) *Pheidolini*, Emery.

- BB. Anterior wings with one closed cubital cell.
 C. Head not cordiform in the ♂ and ♀.
 D. Frontal carinae close together; thorax unarmed, without sutures or dorsal impressions in the ♂ *Melissotarsini*, Emery.
 DD. Frontal carinae more or less distant.
 E. Antennae 7-jointed, without a distinct club in the ♂ and ♀; 13-jointed in the ♂. Epinotum armed, abdomen cordiform in the ♂. *Myrmicarini*, Forel.
 EE. Antennae with more than 7 joints in the ♂ and ♀.
 F. Antennal fossa delimited on the inner side only by the frontal carinae; antennae generally 12- or 13-jointed in the ♂.
 G. Anterior wings with the radial cell largely incomplete; the cubital joins the radial, but does not go beyond it; the brachial unites with the medial; ♂ generally apterous *Cardiocondyliini*, Emery.
 GG. Anterior wings with the radial cell variable; the cubital unites with the radial by a veinlet; the cubital more or less long (*Solenopsis* type); in some genera and groups (a large number of *Cremastogaster* and *Monomorium* and some smaller genera allied to them) the cubital vein shortens so much as to disappear (*Formica* type).
 H. The 2nd joint of the petiole articulates with the upper surface of the abdomen *Cremastogastrini*, Forel.
 HH. The 2nd joint of the petiole articulates with the basal apex of the abdomen.
 a. Characters negative, genera which cannot be placed within any of the others; radial cell generally closed. Mayrian furrows generally distinct in the ♂ *Myrmecini*, Ashmead.
 b. Thorax of the ♂ usually short; promesonotum large; epinotum with the dorsum very short or obsolete, the spines situated very low; in *Meranoplus* the mesonotum projects beyond the epinotum. Antennae 9 to 12-jointed in the ♂ and ♀, and usually more or less retractile into a scrobe. Mayrian furrows well defined in the ♂, which has the antennae 13-jointed *Meranoplini*, Emery.
 c. Antennae 11 to 12-jointed in the ♂ and ♀, more rarely 7 to 10, usually with a 2 or 3-jointed club; antennae in the ♂ 12 or 13-jointed, rarely 11; anterior wings with the radial cell always open. Mayrian furrows indistinct in the ♂ (except *Monomorium*) *Solenopsidini*, Forel.
 d. Antennae in the ♂ and ♀ 9 to 11-jointed, with a club usually of 2 joints; wings with radial cell always closed and with a large discoidal. Mayrian furrows absent *Pheidologetini*, Emery.
 GGG. Cubital vein of the anterior wing united with the radial, or is connected with it by a very short veinlet (*Formica* type).
 e. Antennae in the ♂ and ♀ 12-jointed, without a club; 1st joint of the petiole elongate, abdomen small and pyriform, thorax unarmed, without sutures or clear impressions on the dorsum. Antennae 13-jointed in the ♂, the scape very short; anterior wings with the radial cell closed. *Ocymyrmicini*, Emery.
 f. Antennae in the ♂ and ♀ 11 or 12-jointed, club of 2 or 3 joints; antennae in the ♂ of more than 10 joints; epinotum generally armed. *Leptothoracini*, Emery.

g. Antennae in the ♀ and ♀ with 10 to 12 joints; clypeus with a transverse and high carina on the posterior margin, separating the clypeus from the antennal fossa; antennae in the ♂ 10-jointed, 4 joints having been fused into one long joint *Tetramoriini*, Emery.

FF. Antennal fossa delimited on the inner side by a carina which passes below the eyes and does not correspond (at least in its posterior portion) to the frontal carina; antennae 11-jointed in all the sexes.

Cataulacini, Emery.

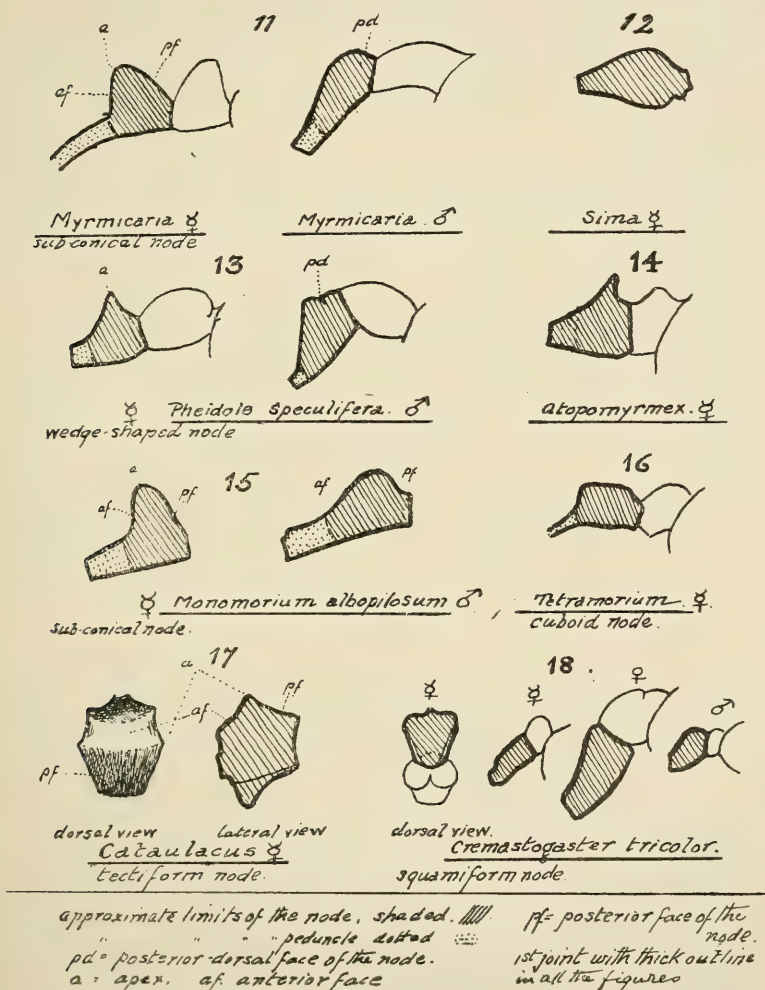
cc. ~~ss.~~ Head cordiform, excavated behind and much narrowed in front; antennae in the ♀ and ♀ with from 4 to 12 joints, in the ♂ with 13 joints; radial cell open *Dacetini*, Forel.

In the following key, the order in which the genera are placed is no indication of their natural affinities, the latter being treated of under the headings of the tribes. The ♂ ♂ and ♀ ♀ being insufficiently known, no key for the identification of those sexes can be constructed which would be of any practical value. The reader should be reminded that, as in the case of the three preceding sub-families, the petiole is treated of as a distinct region, in the Myrmicinae composed of 2 joints, and that the abdominal segment which articulates with the 2nd joint of the petiole is referred to as the 1st abdominal segment. The 1st joint of the petiole usually consists of an anterior stalk or peduncle, articulating in front to the epinotum, and bearing behind a swollen portion, the node. The 2nd joint (2nd node) is rarely, if ever, pedunculate in front, but it may be more or less narrowed in its posterior half. The structure of the petiole is of considerable diagnostic value, and in order to avoid frequent repetition the following remarks on the shape of the organ should be carefully noted.

In the ♀, the relative proportions of the node and the peduncle of the 1st joint are very variable. The node may be so large as to render the peduncular portion almost obsolete, as in *Meranoplus*, *Sima*, and *Cataulacus*; or the node may be of such a shape that no definite line of demarcation can be drawn between a nodal and a peduncular region, *Leptothorax*, many species of *Pheidole*.

The shape of the node is very diverse. It is usually more or less wedge-shaped, or a combination of a wedge and a cone, or it may be more or less cuboid. When the faces of the wedge are approximated and the sides also compressed, it merges into a more or less squamiform node, as in *Tetramorium squaminode*. On the other hand, when the faces of the wedge are very oblique, we have a tectiform node, as in *Cataulacus*. Again, if the faces and sides of a wedge are rounded, a more or less conical shape is produced. Such a shape, with the apex very considerably rounded, is one of the commonest, and when much

rounded above and flattened, passes into the hemispherical. When the apex of the node is directed more forwards than upwards, the



FIGS. 11-18.

posterior face acquires a more or less dorsal position (= posterior-dorsal face); this is frequently the case in the ♀ and ♂, even when the apex is directed upwards in the ♀ (*Monomorium*, *Pheidole*, and others). In the ♂, the node is commonly less distinct than in the ♀ or ♀ (see Figs. 11 and 13). In measurements of the node, the length

is taken along its ventral surface, where it is longest; however it is difficult at times to decide where the node ends and where the peduncle begins. In these cases, the relative proportions of the two parts can only be considered approximate.

In *Cremastogaster*, there is no node in the strict sense of the term, since the first joint of the petiole has the form of a very oblique squame, the two faces of which are placed more or less dorsal and ventral respectively, united to the epinotum by a very short and narrow articular portion.

In *Myrmicaria* ♂, the node, which is more or less subconic, is very sharply defined; it serves as a very good example to illustrate the distinction between the two portions of the 1st joint. In *Tetramorium* and some other genera, the node is often cuboid and furnished with a more or less distinct peduncle.

The 2nd joint is usually thicker in front than behind. It is also generally narrower behind, but is never so much so as to form a distinct peduncle attaching it to the abdomen. It varies less in shape than the 1st joint. The ventral lamella of the 1st joint is not often produced into a spine or tooth, as is so frequently the case in the *Ponerinae*.

The above remarks serve to show that the shape of the nodes cannot often be described accurately in one word, and such expressions as cuboid, conical, wedge-shaped, etc., must be understood as being only approximate definitions.

Key to the Genera of the Myrmicinae, ♂ ♀.

- (2). 1. Clypeus not prolonged backwards between the frontal carinae, which are placed more or less close together. Antennae 12-jointed. *Sima*, Roger.
- (1). 2. Clypeus prolonged backwards between the frontal carinae, which are more or less widely separated.
- (4). 3. Petiole attached to the dorsal surface of the abdomen. *Cremastogaster*, Lund.
- (3). 4. Petiole attached to the basal apex of the abdomen, below the dorsal surface.
- (10). 5. Head strongly cordiform, narrow in front, deeply emarginate behind, the posterior angles strongly rounded.
- (9). 6. Antennae 6-jointed.
- (8). 7. Antennal scrobe present; head without spines; a spongy mass covers the petiole, at least in part; hairs spatulate. *Strumigenys*, Smith.
- (7). 8. Antennal scrobe absent; head spined posteriorly; petiole without a spongy covering; hairs simple. *Microdaceton*, Santschi.
- (6). 9. Antennae 4-jointed. *Epitritus*, Emery.
- (5). 10. Head not strongly cordiform, nor deeply emarginate behind.

- (35). 11. Antennae with 11 joints or less.
- (20). 12. Antennal scrobes present.
- (14). 13. The antennal scrobe lies below and external to the eye; posterior angles of the head more or less prolonged and denticulate. Epinotum armed. Antennae 11-jointed *Cataulacus*, Smith.
- (13). 14. The antennal scrobe lies above the eye; posterior angles of the head not prolonged and denticulate.
- (18). 15. Pro- and mesonotum more or less distinct, not forming a single piece which overhangs the epinotum.
- (17). 16. Antennae 11-jointed
- (16 b). 16 a. Hairs simple *Xiphomyrmex*, Forel.
- (16 a). 16 b. Hairs spatulate *Dicroaspis*, Emery.
- (16). 17. Antennae 10-jointed Sub-genus *Decamorium*, Forel.
- (15). 18. Pro- and mesonotum more or less fused into a single disc, the posterior margin of which overhangs the epinotum. Antennae 9-jointed. *Meranoplus*, Smith.
- (12). 20. Antennal scrobes absent.
- (22). 21. First joint of all the tarsi, or at least of the anterior or the posterior tarsi greatly enlarged, as wide as the tibiae. Thorax without trace of sutures. Antennae 6-jointed *Melissotarsus*, Emery.
- (21). 22. First joint of the tarsi simple, not enlarged; antennae with more than 6 joints.
- (24). 23. Antennae 7-jointed *Myrmecaria*, Saunders.
- (23). 24. Antennae with more than 7 joints.
- (30). 25. Antennae 11-jointed.
- (29). 26. Epinotum unarmed or at the most feebly bituberculate. ♂ ♀ usually monomorphic.
- (28). 27. Clypeus bicarinate, or with carinae at least faintly indicated. *Monomorium*, Mayr (part).
- (27). 28. Clypeus without carinae *Diplomorium*, Mayr.
- (26). 29. Epinotum bidentate; ♂ ♀ strongly dimorphic, the ♀ with very large elongated heads *Aneleus*, Emery.
- (25). 30. Antennae with less than 11 joints.
- (32). 31. Antennae 9-jointed (♂ 13-jointed, ♀ 10-jointed). ♂ ♀ very small, ♂ and ♀ enormously larger than the ♀ *Carebara*, Westwood.
- (31). 32. Antennae 10-jointed.
- (34). 33. Dimorphism of the ♂ ♀ but slightly marked, or if not, the head of the ♀ major is subquadrate or broader than long. *Solenopsis*, Westwood.
- (33). 34. Dimorphism of the ♂ ♀ strongly marked; head of the ♀ major (♀) elongate *Aeromyrma*, Forel.
- (11). 35. Antennae 12-jointed.
- (37). 36. At least some of the hairs on the body spatulate. *Calyptomyrmex*, Emery.
- (36). 37. Hairs on the body not spatulate but simple, or trid (most species of *Triglyphothrix*), or slightly clavate (*Leptothorax*).
- (39). 38. First node of petiole bidentate or bispinose above. *Atopomyrmex*, André.
- (38). 39. First node of petiole simple.

- (41). 40. Middle and hind tibiae without calcaria; no clavate hairs present.
Cardiocondyla, Emery.
- (40). 41. Middle and hind tibiae with calcaria; if not, then the erect hairs on the body are more or less clavate.
- (47). 42. Posterior border of the clypeus raised in the form of a trenchant ridge bordering the antennal fossa (rather feeble in *Rhoptromyrmex*).
- (44). 43. Epinotum unarmed; no antennal scrobe. First joint of petiole usually laterally compressed . . . *Rhoptromyrmex*, Mayr.
- (43). 44. Epinotum armed; antennal scrobes usually present.
- (46). 45. Erect hairs simple . . . *Tetramorium*, Mayr.
- (45). 46. Erect hairs usually trifid. Nodes of petiole usually strongly transverse . . . Sub-genus *Triglyphothrix*, Forel.
- (42). 47. Posterior border of the clypeus not raised in the form of a ridge.
- (49). 48. Flagellum without a distinct club; ♂ ♂ polymorphic.
Messor, Forel.
- (48). 49. Flagellum with a more or less distinct club.
- (51). 50. Clypeus usually bicarinate; ♂ ♂ rarely polymorphic.
Monomorium, Mayr (part).
- (50). 51. Clypeus not bicarinate, occasionally with a median carina.
- (53). 52. ♂ ♂ strongly dimorphic, consisting of ♀ ♀ with very large heads, and an ordinary ♂ caste; more rarely polymorphic (sub-genus *Allophaidole*) . . . *Pheidole*, Westwood.
- (52). 53. ♂ ♂ monomorphic.
- (55). 54. The peduncle of the 1st joint of the petiole very long; thoracic sutures almost or entirely obliterated . . . *Ocymyrmex*, Emery.
- (54). 55. The peduncle of the first joint of the petiole not very long.
- (57). 56. Epinotum unarmed; erect hairs not clavate; no antennal scrobes.
Tetramyrmex, Forel.
- (56). 57. Epinotum usually armed; erect hairs clavate; a shallow indication of the antennal scrobes sometimes present. Middle and hind tibiae without calcaria . . . *Leptothorax*, Mayr.

The above key applies only to the species so far known from South Africa. In many species of *Pheidole* the club of the antennae is by no means sharply defined, hardly more than in the genus *Messor*, but in the latter genus the largest workers are connected with the smallest by a gradual series of intermediate forms, and the head, although perhaps much larger, does not differ materially in shape from that of the smallest workers. In *Pheidole*, on the other hand, the workers are dimorphic (with the exception of the sub-genus *Allophaidole*, in which there are intermediate grades between the ♀ and the ♂), the ♀ being sharply differentiated from the ♂, and having a differently shaped head.

In some species of *Leptothorax*, the posterior margin of the clypeus is slightly raised in a ridge posteriorly, but the clavate hairs and the absence of calcaria to the middle and hind tibiae will serve to distinguish them from the members of the tribe Tetramorini.

The frontal carinae in *Melissotarsus* are placed close together as in the genus *Sima*, but the absence of thoracic sutures, the structure of the metatarsus, and the 6-jointed antennae easily serve to distinguish them from the latter genus.

SECTION I. PROMYRMICINAE, Emery.

TRIBE PSEUDOMYRMINI, Forel.

GENUS SIMA, Roger.

Berlin. Ent. Zeitschr., vol. 7, p. 178, 1864.

Characters.

♂. Head more or less rectangular, somewhat truncate in profile anteriorly, the clypeus and mandibles being placed vertically below the anterior face of the head; antennae 12-jointed, slightly thickened towards the apex; eyes usually very large. Thoracic sutures distinct; the metanotum, usually not recognisable in the majority of ♀ ants, is more or less distinct in this genus. Epinotum high, unarmed. Abdomen more or less cylindrical and elongate. Sting exserted. ♀♀ dimorphic in *S. ambigua*, race *rhodesiana*, but the dimorphism is confined to the structure of the head.

♀ & ♂. Very similar to the ♀, except for the usual sexual differences in the structure of the thorax. ♂, antennae 13-jointed.

The members of this genus are almost all tree-ants, nesting in hollow twigs or thorns, or in hollow reeds. Our two commonest species, *ambigua-rhodesiana* and *natalensis-bulawayana*, are very partial to the *Acacia horrida*. They are very quick ants, and have a habit of sliding, on the approach of danger, to the opposite side of the leaf or branch, or of dropping to the ground. The sting is powerful, and readily used.

Key to the Species of *Sima*, ♀ ♀.*^v

- (2). 1. Large and stout species. Frontal carinae wider apart than in the other species of the genus; 3 ocelli well developed.
(Sub-genus *Pachysima*, Emery), *aethiops*, Smith.
- (1). 2. Smaller and more slender species; frontal carinae closer together.
- (6). 3. Pronotum with distinct anterior angles, sharply margined. 2 or 3 distinct ocelli (sub-genus *Sima*, s. str.)
- (5). 4. Colour yellow or brownish yellow; 6-8 mm. long *natalensis*, Smith.

* I am indebted to Prof. Emery for valuable advice in the construction of this key.

- (4). 5. Colour blackish; 4.5 mm. long *Andrei*, Mayr.
 (3). 6. Pronotum with anterior angles rounded; ocelli rudimentary or absent.
 Small species (sub-genus *Tetraponera*, Smith.)
 (14). 7. Colour black or brown, or, if yellow, head and thorax smooth and
 shining (var. *durbanensis*, Forel, *S. clypeata*).
 (9). 8. Clypeus angular in the middle *Penzigi*, Mayr.
 (8). 9. Clypeus quadri- or quinque-dentate, or bicarinate and bidentate.
 (11). 10. Clypeus with two longitudinal carinae ending in minute teeth at the
 anterior margin. *Liengmei*, Forel.
 (10). 11. Clypeus without longitudinal carinae.
 (13). 12. Clypeus quadri-dentate *clypeata*, Emery.
 (12). 13. Clypeus quinque-dentata, the median tooth small, much smaller than
 the inner pair of teeth. *clypeata*, race *Braunsi*, Forel.
 (7). 14. Yellow or reddish yellow species; head and thorax not smooth and
 shining.
 (20). 15. Pronotum margined, at least laterally.
 (17). 16. Clypeus emarginate in the middle *bifoveolata*, Mayr.
 (16). 17. Clypeus not emarginate.
 (19). 18. Anterior margin of clypeus produced in the middle into a rectangular
 lobe *ambigua*, Emery.
 (18). 19. Anterior margin of clypeus not lobed, feebly tridentate in the ♂
 minor, distinctly so in the ♀ major.
ambigua, var. *rhodesiana*, Forel.
 (15). 20. Pronotum not margined. Clypeus with five teeth on the anterior
 margin, the two outermost teeth the smallest. Eyes occupying nearly
 one-third of the sides of the head; 4.5 mm. long *Emeryi*, Forel.

S. (Sub-Genus *PACHYSIMA*, Emery) *AETHIOPS*, Smith.

Trans. Ent. Soc. London, p. 71, 1877. (Sub-Genus) Ann. Soc. Ent.
 Belg., vol. 56, p. 97, 1912. Santschi, Rev. Zool. Africaine, vol. i,
 p. 207, ♂, 1911.

♂. 9-9.6 mm. Black; tibiae, tarsi and antennae castaneous brown.
 A very fine and adpressed pubescence on the whole body, denser on
 the flagellum and abdomen than elsewhere. Clypeus and apex of
 abdomen with a few long, yellowish, exerted hairs. Shining, espe-
 cially the head; the thorax duller than the abdomen. Head and
 thorax closely and finely punctured. The punctures are scantier on
 the vertex of the head than on the cheeks; the punctures on the
 pronotum are larger but shallower than elsewhere. Nodes and abdo-
 men shallowly but closely punctured; the punctures are smaller on
 the 2nd node than on the 1st, and very fine on the abdomen. Legs
 shining and shallowly punctured.

Head as wide as long, a little narrower in front than behind. Eyes
 large, placed a little behind the middle of the head. Three distinct,
 but small and flat ocelli. Clypeus with the lateral angles rounded and

prominent; the anterior margin is shallowly concave in the middle and narrowly inflected, the median area is aciculate and coarsely punctured. The mandibles are broad, with 4 strong teeth, and coarsely striate. The frontal carinae are much further apart than in species of the other sub-genera, and slightly convex externally. The scape is short, not extending beyond the level of the middle of the eyes, the 3rd-10th joints of the flagellum wider than long. A shining, median, impressed line extends from the posterior margin of the clypeus to about the middle of the vertex.

Pronotum wider than long, the sides distinctly convex, the shoulders obtuse but prominent. Mesonotum more closely and deeply punctured than the pronotum, as long as wide, the anterior border semi-circular. Epinotum convex lengthwise, nearly as long as the pro- and mesonotum together, quite one-third longer than wide; the dorsum merges into the oblique declivity by a gradual curve. The 1st joint of the petiole has a very short peduncle; the node is convex above transversely and longitudinally, wider than long, considerably narrowed behind; the ventral lamella at the extreme base is produced into a short, sharp spine, pointing downwards, and just behind it lies another, but rounded, projection. The 2nd node is widest in the middle, about one-third wider than the 1st, convex above. Seen from above, the lateral margins are very convex. The ventral surface is produced anteriorly into a fairly sharp prominence. The sides of both nodes slope steeply inwards.

♀. 15.5 mm. Colour as in the ♂. Head, thorax, and nodes shining, abdomen nitidulous. Pubescence greyish-black and very fine, dense on the abdomen and 2nd node, much sparser elsewhere. A few long, yellowish, pilose hairs on the clypeus, nodes, and abdomen. Puncturation in the main like that of the ♂, but stronger and much more abundant on the nodes and abdomen, and scantier on the thorax. Head a little longer than wide, very little narrower in front than behind, almost parallel-sided, about as long as the pro- and mesonotum taken together. Pronotum widely exposed above, not much lower than the mesonotum, narrower in front than behind, convex transversely, the shoulders rounded and not angular as in the ♂. Scutellum as long as wide, feebly convex transversely and longitudinally, not quite half as long as the mesonotum. Dorsum of epinotum one and a half times wider than long, slightly longer than the declivity. The latter almost vertical, with the brow strongly rounded. Nodes similar to those of the ♂, but the ventral lamellæ of both nodes are produced into much larger and deeper teeth. Otherwise like the ♂ (described from a deülated West African specimen).

“♂. 13.5 mm. Black. The anterior tarsi and base of the genital armature testaceous. Subopaque. Sculpture and pilosity as in the ♀. Head a little wider than long. Posterior margin of the head straight, the posterior corners rectangular and rounded. The oval and very oblique eyes occupy the median two fourths of the sides of the head. Frontal area strongly impressed. Clypeus without a carina. Mandibles with 5 or 6 unequal teeth. First joint of the flagellum longer than wide; the 2nd joint a little less long than the scape. The declivity of the epinotum slightly convex in all directions, a little longer than the dorsum. Wings brownish black, the nervures darker, the stigma black. First joint of the petiole channelled in its anterior half, feebly convex behind. Second node as long as wide. Genital armature exerted, the distal portion of the blackish stipes strongly excised inwards, and ending in a lanciform point, turned inwards and backwards.”

South Africa. (G. A. coll.)

S. (Sub-genus SIMA, s. str.) NATALENSIS, Smith.

Cat. Hymen. Brit. Mus., vol. 6, p. 160, ♂ 1858.

♀. 7 mm. Dark ochreous yellow, somewhat darker and reddish on the head, the flagellum darker towards the apex, the masticatory margins of the mandibles blackish. Dull, very finely and closely punctured all over, the puncturation of the head a little stronger. Pubescence very short, microscopic, a few long hairs on the clypeus, scapes, and apical segment of the abdomen.

Head longer than wide, the sides feebly convex, the posterior angles moderately rounded. The median area of the clypeus is slightly produced forwards, and obtusely tridentate. The frontal carinae raised in front, divergent posteriorly. Mandibles longitudinally striate, quadridentate. The scape does not extend back quite as far as the middle of the eyes; the 1st joint of the flagellum is half as long again as the 2nd. The eyes occupy more than one-third of the sides of the head, and are situated at about the middle. The two posterior ocelli are present. The whole thorax is marginate at the sides and in front, the margin blackish; the sides and the dorsal surface of the thorax meet in a right angle. The pronotum is widest in front, and two-thirds wider than it is long; the promeso- and mesometanotal sutures distinct. The mesonotum is two and a half times wider than long, and but half as long as the pronotum. The metanotum is feebly defined at the sides posteriorly. The epinotum is nearly one-third longer than the rest of the thorax, and nearly twice as long as wide,

and widest at its posterior third. The dorsum of the epinotum is not clearly delimited from the declivity, into which it merges by an even curve. The 1st joint of the petiole is not pedunculate; it is very convex above lengthwise, the dorsal surface, half as long again as wide, is margined laterally and sharply delimited from the sides. The 2nd joint of the petiole is widest behind, about as long as wide, and one-third wider than the 1st joint. The abdomen is elongate, the sides almost straight, the 1st segment a little longer than wide.

♀. 9.2 mm. Similar to the ♂, excepting the usual sexual differences. The teeth of the clypeus are a little larger. The mesonotum is wider than long, and one-quarter longer than the pronotum; the scutellum transversely oval, half as long as the mesonotum. The dorsal portion of the epinotum is about as long as the mesonotum, a little wider than long, and widest at the base; the declivity is less oblique than in the ♂. The puncturation of the epinotum is stronger than in the ♂. Deälated.

Durban. (Marley.) South Africa generally. (G. A. coll.)

NATALENSIS, race OBSCURATA, Emery.

Ann. Soc. Ent. France, vol. 63, p. 22, ♂, 1895.

♂. 6.7 mm. This differs from the type in its slightly smaller size and darker colour, which is ferruginous brown, with the front of the head, the abdomen, antennae, and legs yellowish brown. The puncturation is slightly stronger, and the 1st joint of the petiole is more convex longitudinally.

♀. 8.2 mm. (hitherto undescribed). Colouring similar to that of the ♂. It differs from the ♀ of the type by the stronger puncturation, especially of the thorax. The mesonotum is also narrower, and as long as wide. The dorsum of the epinotum is distinctly shorter and more convex. The 1st joint of the petiole is thinner at the base, and is shorter and more convex lengthwise than in the type. There are a few long pilose hairs on the back of the head and on the thorax. Deälated, otherwise like the ♂.

♂. 8 mm. Head, thorax, and petiole piceous brown, the sides of the scutellum and metanotum, the base and apex of the 1st joint of the petiole, the anterior half of the head below, including the frontal carinae, the mandibles, scapes, and 1st joint of the flagellum dirty yellow; flagellum brown, legs yellowish brown, first three segments of abdomen dirty yellow, but brownish at the margins, the remaining segments dark brown. Wings hyaline, nervures yellow, stigma brownish yellow. The pubescence is much longer than in the

♀, especially on the petiole and abdomen; there are also a few long, erect, and blackish hairs on the thorax. The rugulosity of the surface is much stronger than in the ♂; the posterior half of the head is strongly and rather closely punctured. The mesonotum is sparsely but coarsely punctured. The head is slightly shining on the vertex, the rest of the body dull. Head longer than wide, sides rather convex, posterior margin nearly straight, wider behind the eyes than in front. The eyes occupy about two-thirds of the sides of the head, and are placed a little in front of the middle. Ocelli large, on a slightly raised area. Mandibles shining, feebly and sparsely punctured, armed with 5 teeth. Clypeus feebly convex transversely, with an obtuse median tubercle. Scape of antenna two and one-third times as long as the 1st joint of the flagellum, not reaching back to the posterior third of the eyes. First joint of flagellum very short, about as long as wide, all the remaining joints very much longer than wide; the antenna reaches back as far as the base of the 2nd joint of the petiole. Pronotum exposed above, short, convex transversely. Mesonotum a little longer than wide, with the scutellum a little longer than the head. The epinotum is somewhat flattened, the dorsum and declivity not distinctly delimited; it is widest at the base, and about as long as wide. First joint of petiole with a short peduncle, the node twice as long as wide; 2nd joint conical, widest behind, not quite half as wide again as the 1st joint. The petiole is not margined.

Algoa Bay. (Brauns.)

Race *OBSCURATA*, var. *CAFFRA*, Santschi.

Göteborgs K. Vetans. och Vitterh. Handl., xv, 2, p. 15, ♂, ♀, ♂, 1914.

It is necessary to sink this form to the rank of a variety of *obscurata*, from which it differs only in the following characters:

♂. 6 mm. The colour is lighter, especially on the thorax and front of the head. The posterior half of the head is dark brown, contrasting sharply with the ochreous anterior half. The pronotum is wider; the epinotum is much less strongly punctured, and the node of the 1st joint of the petiole a little narrower and less convex.

♀. The eyes are a little longer. The pronotum is also a little longer and more sharply margined, and anterior angles less rounded. As in the ♂, the colour is generally paler than in the type of the race, but the promesonotal suture has a dark blackish spot in the middle, and the parapsidal sutures are also heavily margined with

darker colour. The 1st node of the petiole is distinctly narrower than in the type.

♂. 7.8 mm. The author's description of this sex agrees entirely with that of the race.

Zululand. (Trägärdh.)

Race *CUITENSIS*, Forel, var. *BULAWAYANA*, Forel.

(Race) Bull. Soc. Vaud., vol. 47, p. 317, 1911. (Var.) Ann. Soc. Ent. Belg., vol. 57, p. 112, ♀, 1913.

"Smaller than the type of the race, less dull, simply sub-opaque. The node is also a little narrower, and the head a little shorter; otherwise like the type of *cuitensis*."

♀. 7.5 mm. This differs from the type of the species in its slightly smaller size, in having the sides of the head more parallel, the epinotum a little more oblique posteriorly, and the 1st joint of the petiole a little narrower.

♀. 8.5 mm. This is smaller than the type of the species. The head is more parallel-sided, the epinotum narrower posteriorly, the denticulations of the clypeus smaller, and the colour a little redder; otherwise like the type.

Bulawayo, Plumtree, Bembesi, Victoria Falls. S. Rhodesia. Nesting in the hollow twigs of trees. (S.A.M., R.M., G.A. colls.)

I have not seen examples of the race *cuitensis*, and am therefore obliged to compare this variety with reference to the type of the species.

S. (Sub-genus *SIMA*, s. str.) *ANDREI*, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 10, p. 144, ♂, 1895.

"♂. 4.6 mm. Black, partly piceous, mandibles, scapes and 1st joint of flagellum, tibiae, tarsi and apex of femora reddish yellow; sometimes the tibiae are brownish red-yellow, and the flagellum, except the 1st joint, yellowish brown. Pilosity almost absent, the decumbent pubescence very fine, short and dense, visible on the head and thorax only under a strong magnification. Dull; head and dorsum of thorax closely and finely punctured, the sides of the pronotum slightly shining and finely rugulose, the sides of the meso- and metathorax, the petiole and abdomen rugulose-punctate, although not easily recognisable on the last, on account of the dense pubescence. The mandibles coarsely longitudinally striate, and with a few punctures, the very oblique masticatory margin quadridentate. The head is, as in *Mocquerysi*, André, rectangular, longer than wide, parallel-sided.

The short clypeus is arcuately emarginate in the middle of the anterior margin, but is not crenelate. The frontal carinae are as in *Mocquerysi*, closely approximated, separated only by the frontal sulcus which reaches back to the neighbourhood of the ocelli, and are divergent behind, and longer than in *Mocquerysi*. The scape does not extend back as far as the anterior third of the eye; the 2nd joint of the flagellum is as long as wide, the rest, excepting the last joint, wider than long. Only two ocelli present. The rather large eyes are situated behind the middle of the sides, and occupy about half the length of the same. The head is but slightly emarginate behind. The thorax is not much narrower behind than it is between the anterior angles of the pronotum; the latter is reversed trapeze-shaped, feebly convex above, a little shorter than wide, the side margins with a sharp, narrow, raised border, the anterior angles rounded and prominent. The mesonotum is short, semi-circular, twice as wide as long. The metanotum is separated from the mesonotum by a narrow sulcus, very short and almost linear in the middle, longer at the sides; the metanotum is not distinctly defined from the epinotum. The epinotum is sharply marginate laterally, the dorsum flat, the brow of the declivity rounded. The 1st joint of the petiole is triangular, the sides sharply margined, hardly pedunculate, widening posteriorly, seen from above flat transversely, but very convex in profile. The 2nd joint is much wider, but shorter than the 1st, nearly twice as wide as long. The abdomen is elongate-ovate. The legs are fairly short."

Delagoa Bay. (Brauns.)

S. (Sub-genus *TETRAPONERA*, Smith) *PENZIGI*, Mayr.

(*Tetraponera*) Ann. Mag. N. H. (2), ix, p. 44, 1852. Formicidae
Schwed. Kilimandjaro Exped., 8, p. —, ♂, ♀, ♂, 1907.

"♂. 3.1-4.7 mm. Black, mandibles, articulations of the legs, tarsi, and often also the tibiae brownish yellowish-red, the antennae usually reddish yellow with brownish club. Pilosity almost absent, the adpressed pubescence very sparse. The whole body shining, finely rugulose and with some scanty punctures, bearing fine hairs; the front of the head, and to a certain extent the cheeks, longitudinally striate, the mandibles coarsely rugoso-striate. The mandibles, particularly in the larger specimens, depressed and flattened in the apical half, the teeth obtuse. Head wider than the thorax, distinctly longer than wide. The middle portion of the clypeus in the larger ♀♀ more or less angularly produced (strongly so in the ♀). The scape does not reach back to the posterior margin of the eyes; the 2nd-6th

joints of the flagellum very short, each about twice as wide as long. The eyes occupy about one-third of the sides of the head, ocelli wanting. The pronotum is margined laterally only at the hind corners; the mesonotum is transverse and oval, shorter than the pronotum; the metanotum is shorter than the mesonotum, about twice as wide as long; the epinotum is but little shorter than the pronotum, the feebly convex dorsum is longer than the declivity and wider at the base than at the apex; the brow of the declivity rounded. The first joint of the petiole is shortly but distinctly pedunculated, the node rounded, a little wider than long, very little narrower than the 2nd joint, the ventral lamella compressed. The 2nd joint is transverse and oval, or pyriform, smaller in front than behind."

"♀. 6 mm. Colour, pubescence and puncturation as in the ♂, the punctures on the cheeks larger than on the frons. The middle part of the clypeus projects very distinctly forwards in a bluntly angular lobe. The rest of the head as in the ♂. The wings feebly tinged with yellowish brown."

"♂. 4.6 mm. Black, flagellum brownish yellow, mandibles and tarsi darker. The pilosity occurs almost only on the ventral surface of the abdomen. The antennae are thickly clothed with very short erect hairs; the abdomen moderately pubescent. The mandibles have moderately long pilose hairs, inserted in coarse punctures; the masticatory margin with several teeth, the anterior ones acute. The head and mesonotum are very finely rugulose and shining, the latter with some strong piligerous punctures. Scutellum and metanotum smooth, the nodes of the petiole almost so, the abdomen finely rugulose. The middle part of the clypeus is strongly arched, ending in front in a blunt point. The scape of the 12-jointed antenna is quite twice as long as wide, the 2nd to the penultimate inclusive, sub-equal, and each about two and a half times longer than wide, the last joint a little longer. The 1st node of the petiole with a short peduncle and distinctly longer than wide, below with a flattened projection. The 2nd joint is but little wider than long, but much wider than the 1st. The wings somewhat paler than in the ♀."

Lehututu, Kalahari. (Schultze.)

S. (Sub-genus *TETRAPONA*) LIENGMEI, Forel.

Mitth. Schweiz. Ent. Ges., vol. 9, p. 88, ♀, ♂, 1894.

"♀. 3.4-3.7 mm. Mandibles with 4 to 5 teeth, the external margins almost straight, shining, feebly punctured and striate. Head elongate and rectangular, one and a half times as long as wide, somewhat

wider and more convex behind. Eyes in the middle of the sides of the head. Clypeus with two very small median carinae placed close together, each ending in front in a blunt tooth. Scape very short, half as long as the distance between the antennal sockets and the occipital margin. Flagellum thick, the joints excepting the first and last, wider than long. Pronotum rounded, as wide as long, flattened above. The metanotum is nearly as long and as wide as the mesonotum, the latter wider than long. The epinotum is fairly convex, the dorsum as long as the declivity, the brow of the latter rounded. The epinotum is as high as the mesonotum. The thoracic segments are separated by deep sulci, but are not constricted. First joint of petiole with a short peduncle, both joints short, thick, wide, and roundly pyriform; the 1st, excluding the peduncle, hardly longer than wide behind, the 2nd much wider than long. Abdomen elongate-ovate, fairly pointed posteriorly. Antennae and legs short and thick. Very shining, very finely and shallowly reticulate; head almost quite smooth. Pilosity nearly entirely absent, only a few thin hairs round the mouth and apex of abdomen. Pubescence very sparse. Brownish black, legs and flagellum brown, mandibles and anterior margin of the head brownish red. Scape, base of the flagellum, the ends of the tarsi, and articulations of the legs yellowish.

♂. 4.7 mm. Wings clear. Clypeus produced triangularly in the middle in front. Head oval, longer than wide. Petiole as in the ♀. Antennae blackish brown, margins of the mandibles reddish; legs brown, tarsi yellowish. All the rest of the body black, shining. Much wider and with a wider petiole than *clypeata*, and with quite a differently shaped clypeus. The very strongly developed metanotum gives this species a very distinctive appearance."

Delagoa Bay. (Liangme.)

S. (Sub-genus TETRAPONERA) CLYPEATA, Emery. (Plate V, figs. 50, 50a.)

Bull. Soc. Ent. Ital., vol. 18, p. 361, ♀, 1886.

♀. 3.6-4 mm. Black, mandibles ferruginous, legs brownish black, tarsi and articulations reddish brown, antennae reddish yellow, darkening to brown towards the base and the apex. Very smooth and shining. Head, thorax, and abdomen microscopically rugulose, with a few fine punctures; the anterior half of the head rather closely but very finely and shallowly punctured. Pubescence exceedingly sparse and microscopical, except on the antennae, where it is dense and longer. Clypeus and last three abdominal segments with a few long, erect, pilose

hairs. Head widest between the eyes, nearly one-third longer than wide, the posterior angles very rounded. Eyes placed in the middle of the sides of the head, occupying a little more than one quarter of the latter; a trace of the anterior ocellus present. Median portion of clypeus raised and produced; the anterior margin of the protruded area is quadridentate (see fig. 50, Plate V); the inner pair of teeth are larger and further apart from each other than they are from the outer teeth. (In the two specimens at my disposal there is a slight asymmetry produced by the sub-division of either the right or the left inner tooth.) The scape extends backwards to the posterior margin of the eyes; the 1st joint of the flagellum is longer than wide, and is as long as the 2nd-4th joints taken together; the latter and also the 5th and 6th are wider than long, the remaining joints longer than wide. Frontal carinae short, slightly divergent behind. Mandibles tridentate, feebly striato-punctate, the external and internal margins subparallel. The dorsum of the thorax is not margined. Pronotum widest anteriorly, flattened above, as long as wide; mesonotum sub-circular, nearly as long as the pronotum; pro-mesonotal suture feeble, meso-metanotal fairly well defined. The metanotum is much narrower than the mesonotum and is separated from the epinotum by a deep and wide groove, slightly clathrate laterally. The epinotum is widest at the base, twice as long as wide, as long as the pronotum, the lateral dorsal margins and the brow of the short and oblique declivity, strongly rounded. The peduncle of the 1st joint of the petiole is about half as long as the node, the latter is nearly twice as long as wide. The 2nd joint is bell-shaped, widest posteriorly, and two-thirds wider than the 1st joint. Seen in profile, both joints are very convex above. Abdomen elongate-ovate, 1st segment longer than wide. The femora are swollen in the middle.

♀. 5.5 mm. Differing from the ♂ in the following characters. The head is more parallel-sided; the inner pair of teeth on the anterior margin of the clypeus are much larger, and the outer pair relatively smaller. The pronotum has the anterior angles less rounded, the sides more parallel; it is distinctly wider than long. The mesonotum is widest in the middle, in front of the tegulae, and one-third wider than long. The scutellum wider than long, two-thirds as long as the mesonotum. The epinotum is wider at the base than it is long, seen from above, reversed trapezoid, not elongately triangular as in the ♂. Three small ocelli are present. Other characters as in the ♂. (Deålated.)

(S.A.M. coll.)

Race BRAUNSI, Forel. (Plate V, fig. 49.)

(as species), Ann. Soc. Ent. Belg. vol. 57, p. 112, ♂, ♀, 1913.

♂. 4-4.4 mm. This form differs from the type in its larger size, the slightly stronger puncturation, and the shape of the produced median portion of the clypeus. This is like that of *clypeata*, but in the majority of specimens has in addition a median unpaired tooth, somewhat smaller than the inner pair of teeth on each side of it. This median tooth in some examples is very small, or quite obsolete, in which case the clypeus exactly resembles that of *clypeata*. The peduncle of the first joint of the petiole is perhaps a trifle longer than in the type species.

♀. 7 mm. The median tooth is very small or entirely absent. The mandibles are more strongly striate and punctate than in the type species, and the head is also more shining. Otherwise similar. Deälated.

Willowmore, Cape Prov. (Dr. Brauns.) (S.A.M., R.M., G.A. colls.)

Race BRAUNSI, var. DURBANENSIS, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 218, 1914.

Entirely dark ochreous yellow. Head, thorax, and abdomen smooth and shining. Epinotum more convex lengthwise than in the race. A little smaller and more slender, 3.8-4 mm. Otherwise similar to the race.

Durban. (S.A.M., R.M., G.A. colls.)

Race BRAUNSI, var. EQUIIDENTATA, n. v. (Plate V, fig. 48.)

♂. 3.5-4 mm. This differs from the race in its smaller size and in having the median tooth as large as the inner pair of teeth, the outer pair of teeth much smaller, and the clypeus produced further forwards. Capetown, nesting in the tunnels made by a species of *Allodape*.

(S.A.M., G.A. colls.)

S. (Sub-genus TETRAPONERA) BIFOVEOLATA, Mayr.

Ann. K.K.N.H. Mus., Wien, vol. 10, p. 146, ♂, 1895.

“ ♂. 3.8-4.2 mm. Reddish yellow, eyes black, masticatory margin of the mandibles and apex of abdomen brown. The pilosity is sparse, even on the scapes and the tibiae; the body, excepting the thorax, has an abundant pubescence, which is somewhat oblique on the head,

especially on the cheeks and on the legs. Moderately shining; head, thorax and petiole very finely rugulose or reticulate; the head is also scantily punctured, the abdomen finely so, the punctures piligerous. The mandibles are longitudinally striate, with scattered punctures, the masticatory margin furnished with four or five teeth, and merging in a curve with the internal margin. The elongate and quadrangular head is wider than the thorax, about one and a half times as long as wide, almost parallel-sided, slightly narrower in front than behind. The short clypeus has an unarmed, and widely but shallowly emarginate anterior border. The frontal carinae are placed close together, diverging slightly posteriorly. Frontal area wanting. The frontal sulcus is clearly marked only between the anterior third of the carinae. The scape reaches back to the anterior third of the eye, the 2nd-10th joints of the flagellum wider than long. Ocelli absent. The rather large oval eyes occupy about one-third of the sides of the head, and are situated distinctly behind the middle of the latter. In front of, and above the posterior margin of the head there are two circular foveae, more or less distinctly margined and rugosely granulate; the diameter of each of these pits is about one-fifth or one-sixth of the posterior margin of the head; the latter is arcuately emarginate. The thorax is distinctly wider in front than behind, only the sides of the pronotum are marginate, and the dorsum is not very convex. The pronotum, seen from above, is somewhat longer than wide, wider in front than behind, the rectangular anterior corners rounded. The pro-mesonotal suture is distinct. The mesonotum is hardly longer than it is wide in front, and very little narrower behind than in front. A metanotum is not indicated, its stigmata lie just in front of the shallow constriction between the meso- and epinotum. The dorsum of the latter is longer than wide, and merges into the equally long and transversely convex declivity. The first joint of the petiole has a very short peduncle, its node is of an elongate pyriform shape, not marginate laterally; seen in profile, the node is steeper in front than behind; the 2nd joint of the petiole is shorter and about twice as wide as the first, wider than long, and wider in front than behind. Abdomen oblong, moderately pointed apically, the 1st segment longer than wide."

Delagoa Bay and Zanzibar. (Brauns.)

S. (Sub-genus *TETRAPONERA*) *AMBIGUA*, Emery.

Ann. Soc. Ent. France, vol. 63, p. 23, ♂, ♀, 1895. Forel, Schultze, Reise Süd Afrika, vol. 4, p. 5, ♂, 1910.

"♂, ♀. Testaceous, flagellum pubescent, punctate, dull, eyes in the middle of the sides of the head, pronotum marginate, the rest of

the thorax and the petiole not marginate. 1st node of petiole narrow, 2nd sub-globose. ♂ 4.5 mm., ♀ 5.5 mm.

"Hamman's Kraal and Makapan, Bechuanaland. (Simon.)"

"♂. 4.5-5.5 mm. Head a little longer than wide, narrow in front, posterior margin straight. Eyes large. 1st node pedunculate in front, twice as long as wide. 2nd node much longer than wide. Thorax wider than the head. Shining, scantily and finely punctured. Erect pilose hairs absent, the decumbent pubescence very fine and scanty. Wings as in *penzigi*. Brown; antennae, clypeus, legs and narrow bands on the abdomen pale yellow."

Race RHODESIANA, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 112, ♀, 1913. Arnold, Proc. Rhod. Sc. Assn., vol. 13, pt. 3, p. 31. ♀ maj. 1914.

"This race differs from the type species by the almost total absence of the anterior lobe of the clypeus, which, in the type, is very distinct, rectangular and produced. The three segments of the thorax are also more flattened and margined, and less convex. The curve between the dorsum and the declivity of the epinotum is more abrupt and angular than in the type."

♀. 5 mm. Reddish yellow. Pubescence scanty on the head, thorax and legs, more abundant on the abdomen. A few pale, erect hairs on the head, pronotum, petiole and apical portion of the abdomen. Head, dorsum of thorax and 1st node of petiole very finely reticulate, sides of thorax very finely reticulate-striate. Dull, abdomen nitidulous. Head about one-third longer than wide, wider than the thorax, the sides convex, posterior margin straight. Frontal carinae rather wide in front, raised more above the antennal sockets than in *natalensis*. Median portion of clypeus raised and projecting slightly forwards, its anterior margin bearing three minute prominences, hardly toothed. Mandibles quadridentate, shining and striate. The scape extends back to the anterior third of the eye. The latter very large, almost half as long as the sides of the head, placed rather obliquely, and nearer the posterior than the anterior margin. The two posterior ocelli faintly indicated. Pronotum very slightly wider in front than behind, as long as wide, and distinctly marginate at the sides. Pro-mesonotal suture deep; mesonotum as long as wide, two-thirds as long as the pronotum. Dorsum of epinotum as long as the pronotum, about one-quarter longer than the declivity, which is very steep, almost vertical. First joint of petiole hardly pedunculate, twice as long as wide; the sides of the node are vertical, but the dorsal surface is not marginate;

2nd joint of petiole sub-globose, twice as wide as the 1st. Legs relatively longer than in *natalensis*.

♂ major. 5·8-6 mm. This differs from the ♀ minor not only in its larger size, but also by the structure and sculpture of the head. The anterior angles of the head are much more prominent. The clypeus has the anterior margin produced into three distinct short teeth, which are only indicated by slight prominences in the ♀ minor. The frontal carinae are also wider anteriorly and longer. The mandibles are strongly striated. The posterior half of the vertex is deeply and transversely striated, the region in front of the eyes and below them reticulate-striate, the frontal carinae longitudinally and rather finely striate. The posterior ocelli of the ♀ minor are just distinguishable, whereas in this form they are barely represented by three shallow and minute indentations. Otherwise like the ♀ minor.

♀. 6·8-7 mm. (hitherto undescribed). Head more parallel-sided than in the ♀, one-third longer than wide. The median portion of the clypeus is produced further forwards and its anterior margin is distinctly tridentate. The frontal carinae extend back almost to the level of the anterior margin of the eyes. Three ocelli present. The pronotum is narrower in front than behind, more convex above transversely than in the ♀. The mesonotum is wider than long; on each side of the middle line behind the pro-mesonotal suture there is a short longitudinal impression, about one-third the length of the segment. The head is distinctly rugose, obliquely so in front of the eyes, and transversely and more strongly rugose behind them, but the rugosities are not so coarse as in the ♀ major. Mesonotum very finely rugulose and shining. Otherwise like the ♀.

Plumtree and Bembesi, S. Rhodesia, nesting in thin dead twigs of *Acacia*. (S.A.M., R.M., G.A. colls.)

S. (Sub-genus *TETRAPONERA*), *EMERYI* Forel. (= *CAPENSIS*, Emery, nec. Smith, Forel emend.)

Emery, Ann. Soc. Ent. France, vol. 63, p. 23, ♀, 1895. Forel, Bull. Soc. Vaud. Sc. Nat., vol. 47, p. 367, 1911.

"This species is very shining, and the thorax and petiole are not at all margined. The petiole is even narrower than in *ambigua*. The metanotum has a strong transverse impression behind the suture. The eyes are situated at about the middle of the sides of the head, a little nearer the anterior than the posterior border; they are also smaller, being less than one-third the length of the head; in *natalensis*

and *ambigua* they are more than one-third the length of the head. 4-4.5 mm. Pretoria."

TRIBE MELISSOTARSINI, Emery.

GENUS MELISSOTARSUS, Emery.

Ann. Muss. Civ. Gen., vol. 9, p. 16, 1877.

Characters.

♂. Antennae 6-jointed, the club 2-jointed; frontal carinae closely approximated. Thorax without a trace of sutures. First joint of petiole elongate and triangular, 2nd joint short, transverse, fused behind with the abdomen. Legs thick and short, 1st joint of the anterior or of all the tarsi greatly enlarged, and as wide or nearly as wide as the tibia. Mandibles bluntly tridentate or with the teeth more or less produced and acuminate, especially the apical.*

♀. Similar to the ♂, the teeth on the mandibles acute. Tarsi as in the ♂. Pronotum but slightly exposed dorsally. Wings with 1 closed cubital and 1 closed radial cell; stigma absent.

♂. Antennae 12-jointed, filiform, scape three times as long as the 1st joint of the flagellum. Mandibles small, not well developed. Petiole as in the ♀ and ♀. Tarsi simple. Genital armature exerted. Wings as in the ♀.

M. BECCARII, Emery. (Plate V, figs. 51, 51a and b.)

Loc. cit., p. 17, 2, ♂.

♂. 2.2 mm. Head and thorax reddish ochreous, the front of the head darker, the mandibles ferruginous; legs, antennae and abdomen pale dirty yellow. A very fine and scanty pubescence on the legs and antennae, but absent on the body. Pilosity pale, long and very sparse on the head and abdomen, shorter and even scantier on the thorax. Head microscopically and longitudinally strigose, also finely and sparsely punctured. Dorsum of thorax with very even and distinct longitudinal striae which become feeble towards the brow of the declivity; the declivous anterior and posterior faces of the thorax smooth. Petiole and abdomen microscopically reticulate and shining, legs smooth and shining, head and thorax dull. Head sub-quadrate,

* After seeing a long series of *M. Beccarii*, it appears to me that Emery's division of the neuter caste into 2 and ♀ cannot be maintained. There is a complete gradation between forms with narrow heads and acute mandibles, and those with broader heads and blunt mandibles.

parallel-sided and with the posterior margin shallowly concave in the forms with blunt mandibles, or slightly narrower in front than behind, in those with acute teeth on the mandibles; the latter also have the posterior margin of the head more deeply concave. Forms intermediate in respect to the mandibular structure and the shape of the head also occur. Head much wider than the thorax, very convex transversely. Mandibles tridentate, the masticatory margin straight and with very small blunt teeth, or, more or less oblique, and with the teeth stronger and acute. The internal margin of the mandibles is more or less swollen. Clypeus short, slightly raised in the middle, the anterior margin feebly concave at each side. Frontal carinae short, close together and parallel. Antennae 6-jointed, the scape short, only just reaching the internal margins of the eyes when extended sideways; flagellum very little longer than the scape, the 1st joint as long as the 2nd and 3rd together and a little longer than wide, 2nd joint as long as wide at its apex, 3rd joint a little shorter than the 2nd, wider than long, 4th joint twice as wide as long, 5th joint narrowing to the apex, half as long again as wide, and quite twice as long as the 4th. Eyes small, oval, situated far forwards, composed of about 15 facets, and separated from the base of the mandibles by a distance less than their own long diameter. Thorax rectangular, the corners rounded, nearly parallel-sided, or only very slightly wider in front than behind, convex longitudinally and transversely, the declivity vertical, the brow strongly rounded.

First joint of the petiole triangular, longer than wide, widest behind. Second joint transverse, two and a quarter times wider than long, its posterior face coalesced on the whole surface with the abdomen. Abdomen ovate, all the segments wider than long.

Legs short, the femora swollen, the 1st tarsal joint (metatarsus) of the front pair of legs sub-ovate, wider than the tibia, the other tarsal joints very short. The metatarsus of the middle pair of legs cylindrical, as thick as and two-thirds as long as the tibia. Metatarsus of hind pair of legs slightly compressed, a little wider than the tibia, and like the middle metatarsi, furnished with a series of minute teeth round the outer half of the apex.

♀. 4 mm. Mandibles with masticatory margin oblique and acutely dentate. Eyes large, the facets clearly defined; three ocelli present and well developed. Head narrower in front than behind, posterior angles more pronounced than in the ♂, and posterior margin much more deeply emarginate. Pronotum not greatly exposed, not as high as the mesonotum and three times wider than long. Mesonotum convex above, but as long as wide, the sides smooth, the central area

and also the scutellum longitudinally striate. Scutellum half as long as the mesonotum. Dorsum of epinotum very short, four times wider than long, the brow rounded, the declivity vertical. Second joint of petiole narrower than in the ♀, hardly more than twice as wide as long. Legs as in the ♀.

Antennae, mandibles, petiole and legs dark yellow, the rest of the body brown, a little paler on the mesonotum. Wings with one closed cubital and closed radial cell, recurrent nervures wanting. Nervures brownish yellow, stigma almost obsolete. Otherwise like the ♀.

♂. 3.7 mm. Ochreous yellow, legs and antennae pale yellow, vertex of head slightly brown. Head wider than long. Eyes large, placed in the anterior half of the head, and covering quite half of the sides. Ocelli large. Mandibles very small. Clypeus very short, the median portion raised and projecting slightly forwards. Antennae filiform, scape a little longer than the eye, two and a quarter times as long as the first joint of the flagellum, 2nd joint of flagellum nearly twice as long as the 1st, all the joints longer than wide. The pronotum is vertical, not visible from above; mesonotum strongly convex above, faintly and longitudinally striate. Epinotum and petiole as in the ♀. Tarsal joints simple, not as wide as the tibiae. Genital armature exerted. Wings as in the ♀. Pubescence a little longer and more abundant than in that sex.

Durban, nesting under bark, in moderately populous colonies. (Marley, Cooper.) (S.A.M., R.M., G.A. colls.)

TRIBE MYRMECININI, Ashmead.

GENUS ATOPOMYRMEX, E. André.

Rev. d'Ent., vol. 8, p. 226, 1889.

Characters.

♀. Size variable, all forms occurring from ♀ maj. to ♀ min. Antennae 12-jointed, with a 3-jointed club. Clypeus large, sub-triangular; mandibles short, thick and obtusely dentate. Frontal carinae widely divergent posteriorly, the outer margin projecting so as to form an indistinct scrobe in the largest ♀♀. Eyes not large. Pronotum flat above, produced anteriorly into a distinct neck, from which and from the sides the dorsum is rather shortly delimited. The pronotum is widest in front, narrowed and constricted behind. Pro-mesonotal suture not distinctly defined dorsally. Mesonotum strongly bi-tuberculate above and separated from the epinotum by a

wide and deep depression. Dorsum of epinotum also tuberculate near the base. Epinotal spines large, long, and divergent. 1st node of petiole bispinose above; 2nd node wider than long, the anterior angles rounded but strongly dilated. Middle and hind legs without calcaria, all the femora swollen in the middle; last tarsal joint very large, as long as the 2nd, 3rd, and 4th taken together, and bearing strong claws.

♀. Antennae 12-jointed. Eyes not large, 3 well-developed ocelli. Frontal carinae long, and forming a more distinct scrobe than in the ♀ max. Pronotum very short in the middle; meso- and epinotum of the usual form, and without tubercles or spines; dorsum of epinotum very short, the declivity vertical. 1st node of petiole with the spines of the ♀ represented only by two broad tubercles. Anterior wing with 1 cubital, and 1 marginal, and a closed radial cell.

♂. Mandibles very short, thick, dentate. Posterior margin of head raised to form a collar. Clypeus carinate; frontal carinae widely divergent. Eyes small. Scape short. Thorax and nodes without spines or tubercles. Wings as in the ♀.

A. MOCQUERYSI, André, var. CURVISPINA, Forel.

Rev. d'Ent., vol. 8, p. 227, ♀, 1889. Variety, Deutsch. Ent. Zeitsch., p. 311, 1911.

♀. 4.2-8 mm. The largest ♀ ♀ differ from the media and minima only by the longer frontal carinae, which are expanded outwards so as to form, above the eyes, an ill-defined scrobe. Head dark red, thorax piceous or piceous red, petiole, abdomen and legs black, antennae reddish brown, margins of the mandibles, clypeus and frontal carinae brown. Abdomen, legs, and antennae with a very sparse, microscopical pubescence, a little longer on the antennae; the rest of the body glabrous. Legs shining, disc of pronotum and abdomen very slightly shining, rest of the body dull, except the mesonotal tubercles in the ♀ maxima. Head finely reticulate, with rather irregular and longitudinal rugosities superimposed, which are strongest in front and on the vertex, and become feebler between the eyes and the posterior angles. Neck, sides of thorax, epinotum, sides and posterior dorsal faces of the nodes reticulate. Dorsum of pro- and mesonotum longitudinally and somewhat irregularly rugose, the rugosities diminishing in front of the mesonotal tubercles, which are more or less smooth and shining. Abdomen very finely and evenly reticulate. Head very convex above and high, from apex of closed mandibles to the middle of the occipital margin as long as wide,

distinctly wider behind than in front, the sides converging in front, the posterior angles very round. Mandibles thick, triangular, finely striated, sharply and closely punctured, obtusely dentate, the apical tooth more acute in the smaller ♀♀. Scape short, not reaching to the posterior border of the head; the three apical joints form a slight club, nearly as long as the rest of the flagellum, the 1st joint of the flagellum nearly as long as the following three taken together, 2nd-7th joints wider than long. Clypeus with two strong carinae continued down from the frontal carinae, the anterior margin shallowly sinuate. Frontal carinae flat, widely divergent posteriorly, continued backwards as a fine ridge, which ends well behind the eyes in the ♀ max., but in the ♀♀ media and minima not extending back beyond the front of the eyes. The latter small, and situated behind the middle of the sides. Pronotum with the anterior portion depressed, forming a distinct neck, the posterior portion flat, and with distinct but rounded anterior angles; it is (excluding the neck) widest in front, and twice as wide as it is long in the middle. The thorax is constricted between the pro- and mesonotum, but the suture is not clearly defined above. Mesonotum much narrower than the pronotum; its anterior two-thirds is level with the pronotum, and bears on each side a strong rounded tubercle, behind which the surface slopes steeply down to the meso-epinotal suture. The mesonotum is widest across the tubercles. From the suture the epinotum rises upwards for a short distance, and then slopes gradually downwards towards declivity, which is moderately oblique. Close to the base, the dorsum of the epinotum bears a pair of lateral tubercles, smaller and flatter than those of the mesonotum. The epinotal spines are slightly curved, and directed upwards, backwards and slightly outwards, and are as long as the space between them at their base. The declivity is margined laterally by ridges, which merge above into the base of the spines, and below terminate in two small laminate teeth. 1st joint of petiole as long as wide, widest in the middle, the dorsum flat or shallowly concave, and bearing on each side, just above the steep anterior face, an upward and outwardly directed spine. Second node wider than long, convex above and in front, the posterior margin depressed, the anterior angles dilated, narrower behind than in front. Seen from the side, the spines of the first node hardly project above the level of the dorsum of the 2nd node. Abdomen round, slightly flattened above; 1st segment a little longer than wide, truncate at the base, with distinct lateral angles, and forming four-fifths of the abdomen above.

♀. 13 mm. Head dark red, ocellar triangle blackish, thorax and

abdomen black. Thorax shining. Pronotum obliquely rugoso-striate, scutellum and mesonotum longitudinally striate in the middle, obliquely so outside the parapsidal sutures. Metanotum and the narrow dorsum of the epinotum finely rugulose, the declivity very finely reticulate. Sides of meso-, meta-, and epinotum reticulate, the angles of the epinotum coarsely rugose. 2nd joint of petiole above, shining, sparsely but strongly punctured. Pronotum very little exposed in the middle dorsally. Mesonotum longer than wide, promesonotal suture ellipsoidal. Scutellum sloping and rounded behind. Dorsum of epinotum very short in the middle, the declivity almost vertical; the epinotum is devoid of spines, which are replaced by very blunt angles on each side. 1st joint of petiole with the anterior face more vertical than in the ♀, each side with a strong angle in the middle, and above and inwards there is a pair of rather flat tubercles. Second joint with the anterior angles more dilated than in the ♀. Abdomen oblong, 1st segment one-quarter longer than the 2nd, all the segments wider than long. Wings brownish yellow, with the cubital and radial cells somewhat darker, nervures brown. Otherwise like the ♀ max.

This genus appears to combine in the head and thorax some of the characters of the genera *Cremastogaster* and *Tetramorium*, and the habits of the species described above are decidedly similar to those of the *Cremastogastrii*. It is a slow ant, living in trees, and, mainly carnivorous in its diet. The nest is usually situated in a hollow stem, some distance above the ground. Like the *Cremastogastrii*, these ants, when disturbed, exude a whitish and rather sticky secretion from the anal glands. It has not been found by me except in districts containing large trees.

Sipapoma, Malindi, and Victoria Falls, Rhodesia. Zululand. (Traegaordh.) (S.A.M., R.M., G.A. colls.)

Var. AUSTRALIS, Santschi.

Goeteborgs K. Vetensk. o. Vitterh. Handl., xv, 2, p. 16, ♀, 1914.

"Differs from the type by the slightly stronger sculpturation of the head. The mesonotum is wider. The epinotal spines are a little shorter, less raised. The spines of the 1st node of the petiole also shorter and thicker; the 2nd node longer. The colour in the ♀ minor paler than in the type." Zululand. (Traegaordh.)

TRIBE OCYMYRMICINI, Emery.

GENUS OCYMYRMEX, Emery.

Bull. Soc. Ent. Ital., vol. 18, p. 363, 1886.

Characters.

♀. Head sub-quadrate. Clypeus convex, the anterior margin rendered more or less bidentate by a median excision. Frontal area narrow, distinct. Antennae 12-jointed, nearly filiform, scape long, at least half as long as the flagellum. Mandibles, clypeus and head below the mouth furnished with long curved hairs (ammochaetae). Thoracic sutures absent; thorax unarmed, depressed in the middle. First joint of petiole pedunculate, the peduncle very thin and longer than the node; 2nd joint more or less barrel-shaped. Abdomen small, more or less pyriform, legs very long and slender. ♀ unknown.

♂. Antennae filiform, 13-jointed, the scape very short, not more than twice the length of one ocellus; 1st joint of flagellum very short, half the length of the scape, the remaining joints all at least three times longer than wide. Eyes and ocelli large, the latter on a raised area. Mesonotum very wide and gibbous, overhanging the pronotum. Scutellum gibbous. Mayrian furrows and parapsidal sutures absent. Wings with one closed cubital cell, the discoidal cell absent, the radial short.

The ants of this genus live in hot, arid and sandy localities. The nest, usually made in loose sandy soil, is surmounted by a crateriform mass of earthen or sandy pellets derived from the excavation of the underground galleries. The entrance is always central, at the bottom of the crater. Like other areniphilous ants, the species of this genus possess long curved hairs or "ammochaetae," fringing the mandibles, clypeus, and the ventral surface of the head behind the mouth. The hairs, forming a sort of basket around the mandibles, facilitate the removal of grains of sand in the excavation of their nests. These ants are also endowed with the most marvellous celerity, far excelling in this respect all other ants with which I am acquainted, so much so that they appear almost to fly over the surface of the ground. Their motion is just as erratic as it is swift; they seem incapable of pursuing a straight path for more than a couple of inches, and watching one of these insects for but a short time, a casual observer might be led to suppose that the unfortunate animal, having lost its way, had been seized with hysterical dementia. The

males are exceedingly common at lights during the greater part of the year. I have frequently dug up the nests of the variety *Arnoldi*, without ever having found a ♀ of any sort, nor have ♀ ♀ of any species been described up to now. I believe that the genus will eventually be found to have only ergatoid queens, or that the egg-laying function (with the production of ♂ ♂ and ♀ ♀) is possessed by the whole ♀ caste.

Key to the ♀ ♀ of *Ocymyrmex*. ✓

(NOTE.—In using this key, the term “node of the 1st joint” should be understood to refer to the swollen part of the joint only; it does not include the narrow and short portion which lies between the node proper and the base of the 2nd joint.)

- (2). 1. Outline of 1st abdominal segment, seen from above, evenly convex from the base, not sub-pedunculate. (Plate V, fig. 53.)
barbiger, Emery.
- (1). 2. Outline of 1st abdominal segment, seen from above, shallowly concave just beyond the base, more or less sub-pedunculate. (Plate V, fig. 52a.)
- (8). 3. Less than 8.5 mm. long.
- (5). 4. Node of 1st joint of petiole wider than long. *Weitzaeckeri*, Emery.
- (4). 5. Node of 1st joint of petiole longer than wide, or as long as wide.
- (7). 6. Stouter insect, 2nd joint of petiole hardly longer than the node of the 1st joint; median excision of the clypeus shallow, hardly bidentate; abdomen red, moderately shining var. *Foreli*, Arnold.
- (6). 7. Insect more slender, 2nd joint of petiole one-third to one-half longer than the node of the 1st joint; median excision of clypeus deeper, making the margin distinctly bidentate; abdomen piceous, shining.
var. *Arnoldi*, Forel.
- (3). 8. 10–11 mm. long *Picardi*, Forel.

The races *hirsutus* and *Wroughtoni*, and the var. *micans* of *Weitzaeckeri* are not known to me in nature, and have therefore been omitted from the above key. The different forms of *Weitzaeckeri* are clearly exceedingly closely allied, and ought not to be considered as ranking higher than varieties. The striation of the head varies in strength and direction, even in specimens from the same nest, so that very little reliance can be placed on that feature in the separation of the species and varieties.

O. WEITZAECKERI, Emery. (Plate V, fig. 54.)

Ann. Mus. Civ. Genoa, vol. 32, p. 116, ♀, 1892.

♀. 6.5–7 mm. Castaneous red, tibiae and tarsi paler, femora and abdomen piceous. In some specimens the colouring is darker, the

head and thorax being dark reddish brown, and the abdomen black. Pubescent hairs on the flagellum and tarsi, the rest of the body clothed somewhat irregularly and sparsely with long, semi-erect, pale hairs, which are oblique and rather more abundant on the legs. The inner margins of the mandibles with a row of long curved hairs, curving upwards over the clypeus. The ventral surface of the head behind the mentum, with a row of long hairs curving forwards under the mouth.

Head as wide as long, measured from apex of clypeus to the occipital margin. Clypeus moderately convex transversely, and projecting a little over the mandibles; the anterior margin semi-circularly excised in the middle, the excision bounded by a slight tooth on each side. Mandibles elongate, nitidulous, strongly striate longitudinally, armed with 5 large teeth. Eyes strongly convex, placed somewhat dorsally at about the middle of the sides. Frontal carinae large, raised in front, divergent behind; the frontal area triangular and well defined. Scape long, extending back a little beyond the occipital margin, flagellum slightly thickened towards the apex, all the joints longer than wide, the 1st joint as long as the 2nd and 3rd together. The clypeus is evenly and longitudinally striate, the rest of the head strongly striate, the direction of the striae rather variable. Usually the median portion of the vertex is longitudinally striate from the frontal carinae back towards the occiput, and on each side of the median area the striae become more and more oblique posteriorly, curving back to the eyes. The thoracic sutures are only slightly indicated at the sides, quite obsolete above. The anterior portion of the thorax is convex in front and at the sides, the median portion depressed, the posterior or epinotal region straight or slightly convex. The prothorax is concentrically striate, the meso- and epinotum transversely striate above, obliquely and longitudinally striate at the sides. The striae on the meso- and epinotum are larger and deeper than those on the head and prothorax. The dorsum of the epinotum is half as long again as the declivity. The peduncle of the first joint of the petiole is quite half the length of the joint; the node is distinctly wider than long, very convex above. The peduncle and node are transversely striate, the node feebly so. The 2nd joint of the petiole is as long as wide, more or less campaniform, not so convex above as the 1st node. Abdomen narrow, twice as long as wide, the 1st segment with a slight neck-like constriction at the base, and four and a half times longer than the remaining segments taken together. There are a few very faint transverse striae near the basal half of the 1st segment. Legs very long and slender.

♂. 5.5-6 mm. Piceous, antennae, mandibles and legs ochreous. Head dull, reticulately rugose, except the central area between the antennal sockets and the median ocellus, which is smooth and shining. Rest of body faintly rugulose and very shining. Pilosity similar to that of the ♀, but shorter, and more abundant on the abdomen. Legs and antennae with a pale and long pubescence, more abundant on the latter. Head wider than long; eyes large, placed anteriorly and occupying more than half the sides of the head. Anterior margin of clypeus straight. Frontal carinae obsolete. Scape very short, very little longer than the long diameter of the median ocellus; 1st joint of the flagellum a little wider than long, the remaining joints all much longer than wide. Pronotum not visible from above; mesonotum gibbous, and very convex anteriorly, wider than long. Scutellum rounded behind and gibbous. Petiole not unlike that of the ♀, but the peduncle of the 1st joint is much shorter and wider, the node is also broader and flatter, and longer than wide. The posterior femora are laterally compressed, and strongly sinuate along their basal half. Wings hyaline, nervures pale yellowish.

Orange Free State, Basutoland, and Cape Province. (S.A.M., G.A. colls.)

Var. *ARNOLDI*, Forel. (Plate V, figs. 52, 52a, 55.)

Ann. Soc. Ent. Belg., vol. 57, p. 138, ♀, ♂, 1913.

Race *abdominalis*, Santschi, Goteborgs K. Vetens. o. Vitterh. Handl., xv, 2, p. 16, 1914.

♀. Like the var. *Foreli*, this differs from the type species in having the node of the 1st joint of the petiole longer than wide. The colour of the head is lighter, the dorsal profile of the thorax less concave in the middle. The ♂ is like that of the type.

S. Rhodesia, common. (S.A.M., R.M., G.A. colls.)

Race *abdominalis*, Santschi. I have seen examples of this form, which have the basal portion of the 1st abdominal segment slightly longer, making the abdomen appear narrower. This character does not appear to me to be sufficient to separate them from var. *Arnoldi*.

Var. *FORELI*, n. v.^v

♀. 7.8 mm. This differs from the preceding and the type by its bright red colour, the stronger striation of the thorax, and by the sculpture of the 1st joint of the petiole, which is deeply and transversely striate on the whole of the node and the peduncle. The median excision on the anterior margin of the clypeus is also less deep. The

abdomen is wider, the 1st segment being only a trifle longer than wide, and only twice as long as the 2nd segment, whereas in the type species and in var. *Arnoldi*, it is at least one-quarter longer than wide, and three times longer than the 2nd segment. The basal neck-like portion of the 1st segment is also shorter.

This variety has a very strong cockroachy odour, similar to *Pachycondyla soror*. Redbank, S. Rhod., Victoria Falls.

(S.A.M., R.M., G.A. colls.)

The examples from the Victoria Falls are even larger, 8-8.3 mm., and have the excision of the clypeus almost as deep as in var. *Arnoldi*, but these differences are hardly sufficient to justify their separation as a variety distinct from *Foreli*.

Race *HIRSUTUS*, Forel.

Schultze Reise Süd Afrika, vol. 4, p. 12, ♀, 1910.

"♀. 5.5-7 mm. Reddish brown, with brighter brownish yellow abdomen. The whitish, stumpy, pilose hairs are more abundant and longer than in the type species; the hairs are also thicker. Head less wide in front. First joint of petiole with much longer peduncle, somewhat like *Robeckii*, Emery, and *laticeps*, Forel, and with smaller nodes. The head is also arcuately and transversely striate behind (in the type species somewhat divergent and longitudinally striate), and not so wide."

Severelela and Kooa, Kalahari. (Schultze.)

Race *WROUGHTONI*, Forel.

Loc. cit.

"Differs from the type by its darker brown colour, but more especially by the narrower head which is hardly widened in front, and has the sides more convex. The 1st joint of the petiole has also a longer peduncle, and the yellowish hairs are also longer, although not so blunt as in *hirsutus*. The head is narrower than in *hirsutus*. The ♂ is 4.5 mm. long. Its head is short behind the eyes, wider than long, the hind margin broad and convex. Wings glassy. Mesonotum strongly gibbous in front. First joint of petiole with long peduncle."

Natal. (Wroughton.)

Var. *MICANS*, Forel.

Loc. cit., p. 12.

"♀. 5.5 mm. Head and thorax nitidulous, more closely and finely striate than in the type species. The node of the 1st joint of

the petiole is higher and more distinctly delimited. Otherwise similar, but smaller. The colour is, however, much brighter, yellowish red, and the pilosity is finer and sparser.

“ Okahandja, German S. W. Africa. (Peters.) ”

O. BARBIGER, Emery. (Plate V, fig. 53.)

Boll. Soc. Ent. Ital., vol. 18, p. 364, ♀, ♂, 1886.

♀. 6.5 mm. Very similar to *Weitzaeckeri*, but the thorax is darker and the abdomen is quite black. The striation of the head at the sides in front is a little stronger, but the direction of the striation is very variable. The clypeus is excised like that of *Weitzaeckeri*. The petiole resembles that of var. *Foreli*, but is not quite so strongly striate. The main distinction lies in the shape of the abdomen, which is rounder and with the 1st segment not sub-pedunculate at the base, but convex in its entire outline, when seen from above.

♂. 5 mm. Differs from *Weitzaeckeri* in the shape of the head, which is narrower, not wider than long, but even a little longer than wide. The eyes are much smaller; they are not placed so far forwards, and occupy less than half the sides of the head. The ocelli are also smaller and less raised. The clypeus is very convex in the middle, almost tuberculate. The mesonotum is narrow, finely and longitudinally striate, and separated from the scutellum by a much deeper impression than in *Weitzaeckeri*. The petiole and abdomen are much more sparsely pilose, and the hairs are shorter and thinner. The posterior femora are laterally compressed, but not sinuate along the basal half. The whole insect is much more shining than *Weitzaeckeri*.

Capetown, Orange River, Mahalapye, Bechuanaland. (S.A.M., R.M., G.A. colls.)

O. PICARDI, Forel.

Mitth. Schweiz. Ent. Ges., vol. 10, p. 306, ♀, 1895.

“ ♀. 10–11 mm. Mandibles closely and coarsely striate, quinque-dentate, almost parallel-sided (hardly wider at the masticatory margin than at the base). Clypeus somewhat produced and narrowly and semi-circularly excised in the middle, so as to leave a tooth-like angle on each side of the excision. Head at least as wide as long, wider in front. Eyes situated behind the middle. The scape extends back slightly beyond the occipital margin. Declivity of epinotum steeper than in *Robecchii*, more like that of *Weitzaeckeri*. First joint of petiole with a long peduncle as in the other species, but the node is more

distinct, even more than in *barbiger*; 2nd joint hardly longer than wide, more nodiform than in *barbiger*. First abdominal segment strongly pedunculate as in *Robecchii* and *nitidulus*. Head and thorax almost dull, closely striate and finely reticulate between the striae. Pronotum concentrically striate, the median striae longitudinal. The rest of the thorax above transversely striate, the side longitudinally so. The peduncle of the 1st joint of petiole coarsely, the node finely striate. Second joint of petiole finely reticulate, slightly shining. Abdomen and legs very shallowly reticulate and very shining. Head, thorax, petiole, antennae and legs with fairly short, oblique, thick and blunt brownish black hairs, moderately abundant. Abdomen almost glabrous above. On the legs and antennae the hairs are more abundant, shorter and oblique. The ammochaetae are blackish brown. Head very dark red, the rest of the body black.

"Cubango-Cuito, Mossamedes. (Baum.) Severelela and Kooa, Kalahari. (Schultze.)"

TRIBE CARDIOCONDYLINI, Emery.

GENUS CARDIOCONDYLA, Emery.

Ann. Acad. Nat. Napoli, vol. 2, p. 20, 1869.

Characters.

♂. Antennae 12-jointed, with a 3-jointed club. Frontal area depressed. Pro-mesonotal suture obsolete or nearly so, meso-epinotal suture well defined. Epinotum armed with two short spines or teeth. First joint of the petiole with a long peduncle, the node narrow, 2nd joint broad.

♀. Head as in the ♂, with 3 small ocelli, somewhat sunk below the surface. Pronotum well exposed, not hidden under the mesonotum. Wings long, the nervures only faintly indicated, radial cell open.

♂. Normal and winged, or ergatomorph and wingless. Antennae 13-jointed, or 10 to 11-jointed in the ergatomorphs. So far, winged ♂♂ are known only in *C. Emeryi*, and as an abnormality in *C. Batesi*, which usually has ergatomorph males. For other characters of the winged ♂, see species below.

C. EMERYI, Forel. (Plate V, figs. 57, 57a.)

Mitth. München Ent. Ver., vol. 1, p. 5, ♀, 1881. André, Ann. Soc. Ent. France (6), p. 69, ♂, 1881.

♀. 1.8-2.1 mm. Head, thorax, petiole, legs and antennae ochreous, abdomen brown. Sometimes the head, the club of the antennae and

the 2nd node are darker, reddish yellow or slightly brownish. Head, thorax and 1st joint of petiole finely and evenly reticulate, 2nd joint of petiole very shallowly punctate, abdomen smooth and shining. Whole body and legs microscopically pubescent. Head one-third longer than wide, sides feebly convex, posterior corners rounded, posterior margin straight. Clypeus produced, projecting over the hind portion of the mandibles. The median area of the clypeus is elongate triangular, raised and produced rather far back between the frontal carinae; the lateral portions are laminate and bent upwards. The frontal area is small but clearly defined. The frontal carinae short, divergent behind. Mandibles quadridentate, the apical and post-apical teeth large and acute. The scape does not extend back as far as the hind margin of the head; the 1st joint of the flagellum is two and a half times as long as wide, and as long as the five succeeding joints taken together, the apical joint is four times as long as the penultimate, and nearly as long as the rest of the flagellum less the 1st joint; 2nd-9th joints wider than long. Eyes rather prominent, situated well in front of the middle of the sides. Thorax widest in front, not so wide as the head. Pro-mesonotum hardly longer than wide, meso-epinotal suture distinct. The thorax is distinctly constricted between the meso- and epinotum. The latter is rather convex lengthwise at the base, and slopes rapidly at the apex to the brow of the concave declivity. Epinotal teeth small, triangular. The 1st joint of the petiole has a short, broad peduncle, the node is narrow, convex above, at the sides and in front, the anterior face almost vertical. The 2nd joint of the petiole is oblong transversely, one-third wider than long, and twice as wide as the 1st, convex above and at the sides. Abdomen oval, the 1st segment distinctly longer than wide, and four times as long as the remaining segments taken together. Legs moderately long, femora not swollen; middle and hind tibiae without calcaria.

♀ (hitherto undescribed?). 2.5 mm. Head, thorax and petiole brown, abdomen black, legs, antennae and mandibles yellow, the club of the flagellum infusate. Head very similar to that of the ♂, but a trifle wider. Eyes rather small, very little larger than in the ♂. Ocelli small, inconspicuous and sunk a little below the surface. Pronotum widely exposed at the anterior lateral angles, which are rounded; the median portion of the pronotum is occluded by the mesonotum, which extends far forwards in the middle. The mesonotum is convex in front, very feebly convex or nearly flat transversely in its posterior half. The scutellum is rather flat, very slightly raised above the level of the metanotum. Dorsum of epinotum wider than long, widest at

the base, sloping downwards posteriorly; the epinotal teeth are longer than in the ♀, the space between them shallowly excavated. Petiole as in the ♀. Abdomen similar to that of the ♀, but larger. Wings hyaline, the nervures hardly distinguishable. Punctuation as in the ♀. The pubescence of the abdomen is longer and more abundant than in the ♀.

“♂. 2 mm. Head a little longer than wide; wider in front than behind; mandibles large, armed with 4 or 5 teeth, the apical one being the largest. Clypeus similar to that of the ♀, it is large, fairly convex, rounded in front, raised above the base of the mandibles; frontal area deep, forming an obtuse angle with the clypeus; frontal carinae short, frontal sulcus absent; eyes large, situated in front of the middle of the sides of the head. Antennae 13-jointed, all the joints longer than wide; scape about as long as the first 8 joints of the flagellum. First joint of the flagellum a little wider but as long as the 2nd, the latter longer than the 3rd, the remaining joints lengthen and widen gradually towards the apex, without forming a well-defined club; the apical joint is longer than the two preceding joints taken together. Thorax but slightly elongated, at least as high as wide in front; pronotum visible from above, the lateral angles pronounced but rounded. Mesonotum a little longer than wide, without Mayrian furrows; dorsum of epinotum oblique, longer than wide, wider in front than behind, the declivity half as long as the dorsum, nearly vertical and slightly concave transversely; epinotal teeth strong, acute, divergent towards their apices and directed upwards. Petiole similar to that of the ♀. Abdomen oval; genital armature small, not exposed. Wings with only one cubital cell, the radial and discoidal cells wanting. Reddish testaceous, with the upper surface of the head and of the petiole, the flagellum, and some spots on the thorax more or less blackish, abdomen brownish black. Head and thorax dull, finely punctured, at the bottom of each puncture is a piligerous point. Petiole nearly smooth and moderately shining; abdomen smooth and very shining. Pilosity absent, pubescence fine and not dense. Wings nearly hyaline.”

S. Rhodesia, generally distributed; Durban. (C. B. Cooper.) This very small species is usually found nesting in grassy soil; the entrance to the nest is a very minute hole, not surrounded by any earth or other substances. The species is tropicopolitan.

(S.A.M., R.M., G.A. colls.)

TRIBE SOLENOPSIDINI, Forel.

SUB-TRIBE MONOMORIINI, Emery.

The tribe includes the following South African genera: *Monomorium*, *Diplomorium* and *Solenopsis*.

GENUS MONOMORIUM, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. v, p. 452, 1855.

Characters.

♂. Head more or less rectangular; mandibles narrow, with 3 or 4 acute teeth; clypeus with the anterior margin more or less raised and projecting over the base of the closed mandibles; the triangular or quadrangular median area is raised above the level of the short lateral portions, and has usually two obtuse carinae, convergent behind between the bases of the antennae (see Plate V, fig. 58c); sometimes the carinae end in front in very short blunt teeth; frontal area distinct. Frontal carinae short. Antennae 11- or 12-jointed, with a distinct club formed of the three apical joints. Thorax widest in front; promesonotal suture obsolete, meso-epinotal suture deep and well defined. Epinotum without teeth. First joint of petiole shortly pedunculate in front. Abdomen distinctly, but not widely truncate at the base (see Plate V, fig. 58a).

♀. Thorax elongate, pronotum very little exposed above; mesonotum longer than wide; dorsum of scutellum level or nearly so with that of the mesonotum. Epinotum without teeth; the declivity and the posterior portion of the dorsum more or less excavated and concave, so that the lateral margins appear raised or tumid. Petiole similar to that of the ♂. Abdomen elongate, rounded apically. Wings with one cubital cell, the radial cell open.

♂. Head broad and flat; eyes large, ocelli not large. Mandibles well developed and dentate. Clypeus broad. Antennae filiform, 13-jointed. Thorax similar to that of the ♀. Petiole, especially the peduncle of the 1st joint, wider than in the ♀, the node not so high. Abdomen as in the ♀, but with the basal angles rounded.

This very large genus occurs in both hemispheres, chiefly in the tropical zone, and includes several cosmopolitan species, some of which are frequently found in hot-houses in temperate countries.

Most of our South African species nest in the ground, sometimes forming very populous nests containing many hundreds of the ♀ caste. The ♂ of at least all the South African species which I have seen have a very distinctive, although minute character by which they may be recognised. The base of the ventral plate of the 1st abdominal segment forms a pronounced angle with the sides, so that the base of the abdomen has a distinctly truncated appearance. Moreover, in many species the abdomen has a more or less glaucous sheen, giving a steely reflection. These characters can be best observed under a lens. The truncate appearance of the base of the abdomen is certainly noticeable in some other genera, but rarely to such a marked extent as in *Monomorium*. The specific characters, which when taken together separate our numerous species from one another, are fairly distinctive, but are often not sufficiently palpable when considered singly, so that it is no easy task to frame analytical keys for all the species. I have endeavoured to draw up a key to include all those species which I have seen, and also a few others which are known to me only from descriptions, but which yet appear to possess characters sufficiently distinctive to be utilised in a table.

In many species of the genus, *e. g.*, *albopilosum*, *bicolor*, etc., the sculpture consists in part of a very fine and even raised reticulation, but under a low magnification only, this has a granulate appearance, owing to the manner in which the light is reflected from the smooth areas enclosed within the reticulations. Such a form of sculpture is described in the following pages as *granulate*, since its real character is appreciable only with rather high magnification.

Key to the ♂ of Monomorium.

- Eleven* (4). 1. Antennae 2-jointed (sub-genus *Mitara*, Forel).
 (3). 2. Yellowish species; sides of head distinctly, and of 2nd node of petiole, slightly convex. (mictilis, Forel) race *atomus*, Forel.
 (2). 3. Brownish species; sides of head and of 2nd node of petiole straight. (*exiguum*, Forel), var. *bulawayensis*, Forel.
 (1). 4. Antennae 12-jointed.
 (28). 5. Head and thorax dull, or only very slightly shining.
 (7). 6. Head strongly striate and quadrate. *Emeryi*, Mayr.
 (6). 7. Head not strongly striated.
 (17). 8. Head closely and fairly strongly *granulate* (see remark in introductory paragraph above).
 (12). 9. Dorsum of epinotum distinctly excavated.
 (11). 10. Dorsum of epinotum deeply excavated. Entirely black, 4.2 mm. long; posterior angles of the head prominent, feebly rounded.

afrum, André.

- (10). 11. Dorsum of epinotum not very deeply excavated. Yellowish brown, 2·4 mm. long; posterior angles of the head considerably rounded.
(*Salamonis* L.), race *subopacum*, Smith.
- (9). 12. Dorsum of epinotum not excavated, but flat or convex.
- (16). 13. Black or brownish species.
- (15). 14. 3·5 mm. long. Entirely black; 1st node, seen from above, conical, longer than wide, the peduncle half as long as the node.
(*albopilosum*, Emery), var. *Thales*, Forel.
- (14). 15. 3 mm. long. Dark brown, head paler brown; 1st node less conical, more wedge-shaped, not longer than wide, the peduncle very short.
(*Salamonis* L.), race *Junodi*, Forel.
- (13). 16. Head and thorax bright yellowish red; abdomen brownish.
(*bicolor*, Emery), var. *nitidiventris*, Emery.
- (8). 17. Head very finely sculptured, more or less minutely longitudinally striato-punctate, or reticulate.
- (21). 18. Colour pale.
- (20). 19. Head and thorax brownish yellow. Scape not reaching the hind margin of the head by the length of the eye.
(*Salamonis* L.), var. *diserta*, Forel.
- (19). 20. Head and thorax bright yellow. Scape reaching the hind margin of the head *Pharaonis* L.
- (18). 21. Colour dark.
- (23). 22. A median ocellus fairly well defined; larger species, 3·3–3·8 mm.
(*Salamonis* L.), race *australis*, Emery.
- (22). 23. No trace of ocelli.
- (25). 24. Thorax strongly constricted at the meso-epinotal suture, 2·2 mm.
(*setuliferum*, Forel), var. *notula*, Forel.
- (24). 25. Thorax not strongly constricted at the meso-epinotal suture.
- (27). 26. Abdomen with a bluish, sub-metallic reflection. 1st node conical. 2·8–3·4 mm. long (*Salamonis* L.), var. *opacior*, Forel.
- (26). 27. Abdomen without any bluish reflection. 1st node more wedge-shaped, 3 mm. long.
(*Salamonis* L., race *delagoensis*, Forel), var. *grahamstownensis*, Forel.
- (5). 28. Head and thorax, and usually also the abdomen, smooth and shining.
- (36). 29. Entirely black, or dark brown species.
- (31). 30. Very small species, less than 2 mm. *minutum*, Mayr.
- (30). 31. Larger species, 2·7 mm. and more.
- (33). 32. Large stout species, 3·7–4 mm. Sides of head very convex.
Tchelicofi, Forel.
- (32). 33. More slender species, sides of head not very convex.
- (35). 34. 3 mm. long.
(*Salamonis* L., race *herero*, Forel), var. *willowmorensis*, Forel.
- (34). 35. 2·6 mm. long. (*Salamonis* L., race *Herero*), var. *belli*, Forel.
- (29). 36. Yellow, reddish yellow or yellowish brown species, at least in part.
- (38). 37. Polymorphic species, the ♂ ♂ varying from 1·8 to 4 mm.
(*amblyops*, Emery), race *bulawayense*, Forel.
- (37). 38. Monomorphic species.
- (40). 39. Second node twice as wide as long.
(*Oscaris*, Forel, race *springvalense*, Forel), var. *paterna*, Forel.

- (39). 40. Second node about as long as wide.
 (44). 41. Second node sub-globose; seen in profile, highest at or near the middle.
 (43). 42. Eyes separated from the base of the mandibles by a distance equal to twice the length of the eye. First node feebly convex below 2 mm. long *Leimbachi*, Forel.
 (42). 43. Eyes separated from the base of the mandibles by a distance not greater than the length of the eye. First node strongly convex below 1.4 mm. long (*Braunsi*, Mayr), var. *shilohensis*, Forel.
 (41). 44. Second node not sub-globose, wider in front than behind; seen in profile, highest in front.
 (46). 45. First node distinctly higher than long. 1.6-1.9 mm. long. *Arnoldi*, Forel.
 (45). 46. First node longer than, or as long as high.
 (48). 47. First node not higher than the 2nd. 1.6-1.8 mm. long. (*Oscaris*, Forel), var. *nuptialis*, Forel.
 (47). 48. First node higher than the 2nd.
 (50). 49. Node of 1st joint of petiole very little longer than the peduncle; seen in profile, the dorsum and declivity of epinotum are fairly clearly delimited, the declivity sub-vertical *Schultzei*, Forel.
 (49). 50. Node of 1st joint almost twice as long as its peduncle; seen in profile, the dorsum of the epinotum merges very gradually into the declivity, which is very oblique (*Oscaris*, Forel), race *springvalense*, Forel.

M. AFRUM, André. (Plate V, figs. 58, 58a, 58b, 58c.)

Ann. Mus. Civ., Genoa, vol. 21, p. 540, ♂, 1884.

♀. 4.2 mm. Black, mandibles castaneous, flagellum and tarsi brownish red. Pubescence short and very scanty. Anterior margin of clypeus, petiole and margins of abdominal segments with a few long yellowish hairs. Head, thorax and petiole densely and finely reticulate, but appearing granulate when seen under a low magnification. Abdomen microscopically rugulose or reticulate. The whole body dull. Mandibles shining, striate and coarsely punctured, and armed with 4 sharp teeth. Side of clypeus longitudinally striate. Legs slightly shining.

Head a little longer than wide, as wide in front as behind, sides moderately convex, posterior angles slightly rounded but prominent, the occipital margin almost straight. Eyes flat, situated a little in front of the middle of the sides. Clypeus raised in the middle, obtusely carinate on each side of the raised area, the carinae ending anteriorly in blunt points, and converging posteriorly between the frontal carinae. Frontal carinae short, sub-parallel. Scape long, extending back just beyond the occipital margin; 1st joint of flagellum as long as the 2nd and 3rd together, 4th joint as long as wide, all the

others longer than wide, the club four-fifths as long as the rest of the flagellum. Pro-mesonotum one-third longer than wide. The thorax is compressed laterally and narrowest at the meso-epinotal suture. The dorsum of the epinotum widens towards the brow of the declivity, and is excavated, so that the sides of the excavation form two obtuse longitudinal ridges, diverging backwards; the declivity is short and almost vertical. The 1st joint of the petiole has a short peduncle, shorter than the node, which is wedge-shaped, wider than long and rounded above; the front face of the node is rounded from side to side and vertical, the posterior face is slightly concave in the middle and slopes forwards. The 2nd joint of the petiole is sub-globose, widest in front, and only slightly wider than the 1st. First segment of abdomen a little longer than wide, longer than the remaining segments taken together.

Bulawayo. This species forms very populous nests in the soil, generally in exposed and sunny situations.

(S.A.M., R.M., G.A. colls.)

M. ALBOPILOSUM, Emery.

Ann. Soc. Ent. France, vol. 63, p. 24, ♀, 1895.

“♀. 3-3.5 mm. Elongate, piceous brown, mandibles and articulations ferruginous, pilosity long, fine and white, head and thorax very closely punctured, dull, petiole very finely punctured, nitidulous, abdomen shining, with a bluish sheen, punctured at the extreme base; head elongate, clypeus emarginate, antennae slender. The scape extending back beyond the occipital margin; meso-epinotal suture of thorax moderately impressed, nodes of petiole subequal, legs shining and pilose.”

Bloemfontein, Kimberley, Makapan, Leribe. (Weitzaecker.)
Umfulosi, Zululand. (Tragaordh.)

VAR. *THALES*, Forel. (Plate V, fig. 61.)

Ann. Soc. Ent. Belg., vol. 57, p. 136, ♀, 1913.

♀. 3.5 mm. Black, tarsi, articulations of the legs, and flagellum brownish, mandibles and sides of clypeus ferruginous. Sparingly clothed with thin, white, semi-erect hairs. Head, thorax, and posterior faces of the nodes very finely and closely reticulate-punctate. Clypeus finely and longitudinally striate. Anterior faces of the nodes of the petiole very finely punctured, abdomen smooth, slightly shining, with a bluish sheen. Head a little more than one-quarter longer than wide, sides feebly convex, posterior angles very rounded,

occipital margin straight. Median area of clypeus raised, obtusely bicarinate, the front margin of the median area feebly concave. Frontal carinae short and parallel. A shining and smooth line on the vertex extends back from the end of the clypeus to about the level of the eyes. The latter not large, situated just in front of the middle of the sides. Mandibles longitudinally striate, elongate, armed with 4 teeth, the apical and sub-apical acute. Scape of antenna long, extending beyond the occipital margin, 1st joint of flagellum two and a half times as long as the second, the club, composed of the three apical joints, is as long as the rest of the flagellum. The pro-mesonotum is widest at the anterior fourth; the thorax is rather strongly constricted at the meso-epinotal suture, which is deep. Epinotum longer than wide, widest at the middle, two-thirds the length of the pro-mesonotum, the declivity oblique and about half as long as the dorsum, the brow of the declivity considerably rounded. First joint of petiole with the peduncle half as long as the node, the latter longer and higher than wide, higher than the 2nd joint. The latter is about as long as wide, sub-quadrate, the anterior margin rounded. First segment of abdomen longer than wide, and twice as long as the remaining segments taken together. Legs long and slender.

♀ (hitherto undescribed). 7 mm. Black; mandibles, antennae and legs dark reddish brown, the tarsi paler. Dull, except the basal two-thirds of the second and following abdominal segments, which are smooth, shining and alutaceous. Clypeus longitudinally striate, the rest of the head strongly, and more or less longitudinally rugose, the rugae with a few transverse anastomoses, and also partly radiating outwards from the median ocellus. Mandibles strongly striate. Mesonotum and scutellum longitudinally and somewhat obliquely striate, the striae on the mesonotum thickening posteriorly, the space between the striae closely reticulate-punctate. Epinotum coarsely and irregularly rugose at the sides, transversely on the declivity, the space between the rugae closely punctured. Second node, and posterior face of the 1st node transversely rugose, more coarsely on the latter. First segment of abdomen, and marginal third of the remaining segments distinctly and regularly striate, longitudinally so over the basal half and the sides of the 1st segment, arcuately and transversely over the apical portion of all the segments. Legs and antennae with a short, sparse pubescence. Head, mesonotum, petiole, and abdomen with pale pilose hairs, which are longest on the clypeus, petiole, and margins of the abdominal segments. Head more quadrate than in the ♂; eyes occupying about one-fifth of the sides, and placed in the middle, the ocelli not large. Pronotum not exposed above. Thorax

narrow, nearly two and a quarter times as long as wide across the tegulae. Mesonotum one-third longer than wide, convex, and narrowed in front, flattened above. Epinotum deeply excavated, the excavation starting from the extreme base, and extending over the brow of the declivity, the margins raised and enclosing a Λ -shaped concavity. First node of petiole more squamiform than in the ♀, slanting forwards and with the posterior face more dorsal in position than in the ♀. Abdomen elongate ovate, all the segments wider than long. Deälated.

♂ (hitherto undescribed). 7 mm. Black; all the joints of the tarsi, except the apical, pale flavous, tibiae brownish yellow, articulations of the legs flavous. Pilosity very long and fairly abundant except on the legs and basal halves of the abdominal segments. Legs and antennae with a short and oblique pubescence. Dull, except the basal two-thirds of the 2nd and the following abdominal segments, which are shining and alutaceous as in the ♀. Sculpture of the head as in the ♀ but less regular. Mesonotum and scutellum closely reticulate-punctate, with a few irregular and feeble rugae superimposed, not longitudinally striate as in the ♀. The dorsum of the epinotum is on a much lower level than the scutellum (not much lower in the ♀), and is sparsely and transversely rugose over the basal half, not excavated, sloping downwards from its base to apex, and merging into the vertical declivity by a gentle curve; the lateral angles or tubercles fairly distinct. The nodes of the petiole wider and shorter than in the ♀. The 1st node is deeply emarginate in the middle of the dorsal edge, so as to appear almost bituberculate; the 2nd node is one-third wider than the 1st, two-thirds wider than long, convex at the sides, fairly flat above, narrowed posteriorly, and with an obtuse tubercle on each side above. Wings hyaline, the nervures very faint.

Springvale, Bulawayo, and Matopo Hills, S. Rhodesia; Pretoria. (Lounsbury.) The entrance to the nest is surrounded by a large and low mound of earth. The species is exceedingly pugnacious and stings freely. Some of the nests in the Matopo Hills were very populous, containing probably not less than 1000 workers.

(S.A.M., R.M., G.A. colls.)

M. BICOLOR, Emery, var. NITIDIVENTRIS, Emery.

(Type), Ann. Mus. Civ. Genoa, vol. 9, p. 368, ♀, 1877. (Var.), Ann. Soc. Ent. France, p. 256, ♀, 1893. Mayr, Ann. K.K.N.H. Mus. Wien, vol. 16, p. 7, ♀, 1901 (type?). Karawiew, Rev. Russ. Ent., vol. 2, p. 5, ♀, ♂, 1911.

♂. 3.6 mm. Head, antennae, legs, thorax and petiole bright orange red, abdomen brownish, with more or less of the median portion of the 1st segment yellowish red, apices of the tarsi and the mandibular teeth brownish. Head, thorax and posterior faces of the nodes finely granulate, posterior portion of the clypeus and frontal carinae finely and longitudinally striate, the sides of the thorax more strongly granulate than the dorsum. Abdomen smooth and shining. There is a very fine and short pubescence on the head; the petiole and abdomen have a few long and sub-erect hairs. Head, excluding the mandibles, a little longer than wide, the sides feebly convex. Frontal carinae short and parallel. Eyes situated at about the middle of the sides of the head. Mandibles finely and longitudinally striate, with 4 distinct teeth. Scape long, extending back well beyond the occipital margin, 1st joint of flagellum one-third longer than the 2nd. Thorax narrower than the head; pronotum convex in front and at the sides, a little wider than long, pro-mesonotal suture faintly indicated; mesonotum as long as the pronotum, longer than wide, meso-epinotal suture deep; dorsum of epinotum flat, quite as long as the mesonotum and merging gradually into the declivity. The 1st joint of the petiole has a short peduncle, much shorter than the node; the latter is obtusely conical, and about as long and as wide as the 2nd node. Seen in profile, the 1st node is half as high again as the 2nd. Legs long and slender.

♀. 6.3 mm. Dark yellowish red (burnt sienna), with almost a fiery golden reflection in some lights. Pronotum, mesopleura, sides of the mesonotum, a median spot behind the pro-mesonotal suture, the basal half of the 2nd and following abdominal segments brownish, femora and scape more or less brownish. There is a very sparse and pale pubescence on the whole body, with a few long, pilose hairs on the clypeus, petiole and abdomen. Head and thorax very finely and longitudinally rugoso-striate, the head also somewhat reticulate-punctate; the declivity of the epinotum and the posterior dorsal portions of the nodes transversely and more strongly rugose. Abdomen very finely and longitudinally striate, the basal halves of the 2nd and following segments microscopically coriaceous, and slightly shining. Head sub-quadrate; the eyes convex, situated a little behind the middle of the sides. The dorsum of the epinotum merges gradually into the declivity. The epinotum is shallowly concave transversely from base to apex. The 1st node of the petiole is strongly compressed from front to back, so as to form a fairly sharp and convex dorsal edge; the anterior face of the node is almost vertical, the peduncle very short. The 2nd node is slightly wider than the 1st, and sub-

quadrate, not so high as the 1st. The basal margin of the 1st abdominal segment feebly concave.

The ♀ described by Mayr differs from the above only by its larger size (7.3 mm.), and its ♂♂ appear to me, judging by the description only, to be more closely related to the variety than to the type of the species; they do not differ appreciably from the form described above.

This species nests in loose sandy soil, usually over granite formation (rarely on the schist), and is a very agile insect.

S. Rhodesia, fairly common; Bothaville, Orange Free State. (Brauns.) (S.A.M., R.M., G.A. colls.)

M. TCHELICHOFI, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 244, ♀, 1914.

♂. 3.7–4 mm. Piceous; mandibles, tarsi, articulations of the legs and antennae brownish. Head, disc of pro-mesonotum and abdomen smooth and shining, the rest of the thorax and nodes nitidulous, finely reticulate. Cheeks in front of the eyes, and the frontal carinae finely striate. Mandibles shallowly and longitudinally striate, quadridentate. The clypeus projects considerably forwards, so that the closed mandibles are not quite visible from above. The anterior margin of the median portion of the clypeus feebly emarginate. A very inconspicuous pubescence on the legs and antennae, but almost wanting on the body; pilosity almost entirely absent. Head, excluding the mandibles, slightly longer than wide, the sides very convex, the posterior margin feebly concave in the middle, as wide in front as behind, moderately convex above. The eyes are placed in the middle of the sides of the head. The scape extends beyond the occipital margin by about as much as its own apical width; the 1st joint of the flagellum not longer than the 2nd and 3rd together. Thorax widest in front, barely more than half as wide as the head, fairly strongly constricted at the meso-epinotal suture. Seen from the side, the pro-mesonotum has a convex profile, raised above the level of the epinotum. The dorsum of the latter is half as long again as wide, and slopes downwards towards the declivity, forming a distinct angle at the junction; it is also excavated, the excavation triangular and extending to the base. The declivity is also concave, and is fairly distinctly margined on each side. The anterior face of the 1st node is almost vertical, the posterior-dorsal face convex. The node is sub-ovate, seen from above, and its dorsal edge is rounded, with a slight indentation in the middle; the peduncle a trifle shorter than the node. The 2nd

joint is one-third wider than long, narrowed behind, convex in front, and a little wider in front than the 1st. The abdomen is truncate at the base, and more globose than in the majority of the species of this genus.

Willowmore, Cape Prov. This species forms very populous colonies in rocky ground, and is also a bold insect which uses its sting very readily.

(S.A.M., R.M., G.A. colls.)

M. EMERYI, Mayr. (Plate V, fig. 62.)

Ann. K.K.N.H. Mus. Wien, vol. 10, p. 132, ♂, 1895.

♂. 2.6-3 mm. Yellowish brown, the antennae, mandibles and legs brownish yellow. The pubescence is composed of long, pale and oblique hairs, rather abundant on the head, scantier on the thorax and abdomen. Legs and antennae with a close and short pubescence. The pilosity on the abdomen, petiole and thorax long, and more abundant on the abdomen than elsewhere. Head and thorax dull, nodes and abdomen shining. Head finely and longitudinally striate, obliquely striate between the frontal carinae and the anterior lateral angles, fairly closely punctured between the striae, the punctures piligerous. Thorax longitudinally striate; the pronotum in front, and the epinotum transversely striate, the sides of the meso- and epithorax reticulate-punctate. Abdomen polished; nodes of petiole shallowly punctured.

Head as wide as long, or nearly so, the sides convex, the posterior margin feebly concave, a little wider in front than behind. The eyes are rather small and situated at the middle of the sides. The scape of the antenna barely reaches the posterior margin. The head is noticeably wide, quite two-thirds wider than the thorax. The clypeal carinae are fairly distinct. The mandibles coarsely striate and obtusely quadridentate. The pro-mesonotum is very convex transversely in front, its dorsal profile is also very convex; it is quite twice as wide across the rounded shoulders as it is at the meso-epinotal suture. The dorsum of the epinotum is almost horizontal in profile, half as long, and not more than half as wide as the pro-thorax; the declivity is rather oblique, but forms a very distinct angle at its junction with the dorsum, on each side of which lies a blunt and elongate tubercle, the space between the tubercles feebly concave transversely. The 1st node of the petiole, seen from above, is elongate, almost one and a half times as long as wide, the anterior face vertical and only half as long as the posterior face; the node is rounded above, obtusely

wedge-shaped, as long as its peduncle. The 2nd node is almost campaniform, wider behind than in front, wider than the 1st node and slightly longer than wide.

♀. 8.3 mm. (hitherto undescribed). Reddish yellow-brown, femora, tibiae, and antennae paler, tarsi brownish yellow. Head dull, the rest of the body shining. Clothed with a moderately abundant, long and yellow pilosity, longer and more abundant on the abdomen than on the head and thorax, much more abundant but shorter on the legs and antennae. Head very closely and strongly punctured, the punctures deep, also partly striate between the punctures. The clypeus shining, sparsely and strongly punctured. The front of the head round the antennal sockets finely and longitudinally striate. Mandibles sharply longitudinally striate, quadridentate. Dorsum of thorax largely but scantily punctured at the sides, leaving a median longitudinal area which is impunctate. Nodes sparsely punctured on their posterior halves, also somewhat rugulose. Abdomen very sparsely and finely punctured. Head as long as wide, subquadrate, the posterior angles strongly rounded, the posterior margin straight. Pronotum hardly exposed above. Mesonotum very convex transversely in front, moderately so longitudinally, a little wider than long, and twice as long as the scutellum, which is almost semicircular and not raised much above the level of the epinotum. The dorsum of the epinotum oblique, with a trace of tubercles at the angles, twice as wide at the base as it is long, and not quite as long as the sub-vertical declivity. The junction of the two faces of the epinotum rounded, slightly concave transversely. Nodes as in the ♂. Wings long, pale brownish yellow, the nervures dark yellow.

♂. 3.3 mm. (hitherto undescribed). Head dark brown, the rest of the body pale brownish yellow, legs and antennae pale yellow. Head very finely and longitudinally striate, sub-opaque; the rest of the body very smooth and shining, except the anterior angles of the first node, which are feebly striate. A few very fine punctures scattered on the thorax. Pilosity and pubescence as in the ♀, but shorter and less abundant. Head much wider in front than behind, almost twice as wide. Eyes very large, occupying a little more than the anterior half of the sides, and almost touching the base of the mandibles in front. The latter finely striate, minutely tridentate, the inner and outer margins parallel. Clypeus with the median area raised in the form of a tubercle, subtruncate above. Ocelli very large, raised, the posterior pair twice as far apart from each other as they are from the anterior ocellus. Antennae setaceous; scape very short, barely longer than wide, and not so long as one ocellus. First joint

of flagellum globose (as in *Solenopsis*), as long as the scape, the remaining joints longer than wide, increasing in length successively towards the apex, the apical joint flattened. Mesonotum very gibbous in front, the anterior margin strongly convex transversely and two and a third times longer than the scutellum. The latter is one and a half times wider than long, the posterior margin semi-circular. The mesonotum and scutellum are raised much above the level of the epinotum. The latter is nearly two and a half times wider at the base than it is long; the posterior angles are slightly raised, not distinctly tuberculate. The declivity of the epinotum is vertical, shorter than the dorsum. Nodes as in the ♀, but flatter; the posterior dorsal face of the 1st node is a little wider than long. Wings as in the ♀ but paler.

Redbank, and Nyamandhloru, S. Rhodesia. This species is easily distinguished from our other species by the very wide head, the very convex pro-mesonotum, the narrow 1st node and the campaniform 2nd node.

(S.A.M., R.M., G.A. colls.)

M. MODESTUM, Santschi.

Göteborgs Kungl. Vetens. och Vitterh. Handl., xv, 2, p. 17, ♀, 1914.

“♀. 1.6–1.7 mm. Yellow, smooth and shining. A very short, fine and erect pilosity is abundant over the whole body, including the legs and antennae. Head rectangular, hardly wider behind than in front, the occipital margin straight, the sides feebly convex. Posterior angles of the head rounded. Eyes composed of a single facet, placed slightly in front of the middle of the sides. Clypeus short and abrupt, the two carinae of which are close together and subparallel. Mandibles with masticatory margins oblique, quadridenticulate. The scape extends back as far as the posterior margin of the head; 2nd to 8th joints of the flagellum very short, much wider than long, 9th and 10th joints subequal, the 10th joint only slightly thicker, the last joint very thick and almost as long as the four preceding joints taken together. Pro-mesonotal suture obsolete, meso-epinotal suture moderately deep. Pro-mesonotum slightly convex. Dorsum of the epinotum flat, submargined, forming a distinct angle with the declivity, which is also flat and margined, and two-thirds as long as the dorsum. First joint of petiole with a long peduncle, the node higher than the 2nd, and with its posterior face shorter than the anterior, which is much more oblique; distinctly longer than wide, a little narrower than the 2nd node, which is wider than long.

Related to *termitobium*, Forel, by its atrophied eyes."

Stamford Hill, Natal. (Traegaardh.)

M. ZULU, Santschi.

Loc. cit., p. 18, ♀.

"♀. 1.5 mm. Yellow, legs pale. A few erect hairs around the mouth and the apex of the abdomen, the rest of the body covered with a short adpressed pubescence. Shining, epinotum and petiole sub-opaque. Smooth, with a piligerous puncturation somewhat effaced. Epinotum and sides of thorax very finely reticulate-punctate. Head rectangular, one-sixth longer than wide, the sides moderately convex, the posterior margin straight. The eyes occupy nearly all the second anterior fourth of the sides of the head. Clypeus feebly excised in the middle of its anterior margin, unarmed, the carinae reduced. Frontal carinae sub-parallel. Mandibles with four teeth, the last very small. Antennae 12-jointed; the scape does not extend back quite as far as the hind margin of the head; 2nd-8th joints of the flagellum sub-equal, wider than long, the 9th shorter and hardly wider than the 1st, the 10th more than one-third longer and wider than the 9th, the last joint very thick and nearly as long as the four preceding joints taken together. Pro-mesonotal suture effaced on the dorsum, more distinct laterally. Meso-epinotal impression pronounced, but less so than in *rhopalocerum*. Profile of the pro-mesonotum fairly convex, that of the epinotal dorsum less so, the junction of the dorsum and the declivity forming a rounded but fairly distinct angle. The declivity is feebly margined, and a little longer than half the dorsum, the latter distinctly longer than half the pro-mesonotum. Peduncle of the 1st joint of the petiole half as long as the node, with a tooth below, at its anterior extremity. Node triangular, rounded at the apex and below, higher than long, hardly narrower than the 2nd node. The latter is rounded and one-quarter higher and wider than the 1st.

"This species belongs to the *rhopalocerum*, Em., group. In *Arnoldi*, Forel, *Braunsi*, Mayr, and *speluncarum*, Santschi, the erect pilosity is more abundant, and the epinotum is smooth. In *Schultzei* and *angustinode*, Forel, the colour is different; in *altinode*, Santschi, the petiole is higher, and in *termitobium* and *modestum* the eyes are rudimentary."

Junction of the Umfulosi, Zululand. (Traegaardh.)

M. RHOPALOCERUM, Emery.

Ann. Soc. Ent. France, vol. 63, p. 25, ♀, 1895.

"♀ 1.7 mm. Flāvōus testaceous; abdomen fuscous, very shining;

piligerous punctures very sparse, otherwise impunctate. Head moderately elongate, truncate posteriorly. Clypeus obtusely bidentate. Mandibles quadridentate; last joint of antenna very large, nearly as long as the four preceding together. Thorax fairly elongate, the meso-epinotal suture deeply impressed, the pro-mesonotal suture obsolete, the epinotum very obtusely angulated; the 1st joint of the petiole with a very short peduncle, the node high but narrow, and longer than wide; the 2nd node subglobose, much smaller and a little narrower than the 1st.

“Capetown. (Simon.)”

“Facies of a *Solenopsis*, very smooth and shining, with a few piligerous punctures. . . . The carinae on the clypeus are moderately prominent. The eyes are fairly small, and separated from the base of the mandibles by one and a half times their own diameter. The scapes do not extend back to the occipital margin. . . . The thorax is elongate, compressed at the meso-epinotal suture, which is deeply impressed and striated. . . . The joints of the petiole are very unequal. The first, seen in profile, appears pedunculated along two-fifths of its length, the node cuneiform; seen from above, the node appears distinctly longer than wide, rounded in front. The 2nd joint is globose, much smaller and a little narrower than the 1st.”

M. HAVILANDI, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 443, ♂, ♀, 1910.

“♂. 2.5 mm. Mandibles strongly striated, tridentate. Clypeus entire, strongly concave between its two carinae; these are separate in front, but nearly contiguous between the frontal carinae, and are continued round the sides to the anterior margin. Head nearly quadrate, a little longer than wide, and a little wider in front than behind; the sides feebly convex, widely concave behind. The eyes are fairly large, slightly elongate, placed between the middle and the anterior third. The scape does not extend back quite as far as the hind margin of the head; 3rd-8th joints of the flagellum wider than long, the club not very thick, the penultimate joint only a little larger than the preceding. Pro-mesonotum convex, without a distinct suture, the constriction a little feebler than in *gracillimum*. Epinotum convex, the dorsum merging by a barely perceptible curve into the declivity; the dorsum not at all depressed, fairly narrow, a little convex transversely, as long as the declivity. First node cuneiform, rounded, convex below as in *minutum*, with a short peduncle in front shorter than the node, and bearing below an obtuse tooth. Second node small, lower and not

wider than the 1st, a little wider than long. Cheeks, frontal carinae, and antennal pits striate. The rest of the head smooth, with a strong, scattered, and abundant puncturation. Thorax and petiole densely and not very finely reticulate-punctate and dull, except the dorsum, which is reticulate and sub-opaque; the middle of the pro-mesonotum smooth. Abdomen and legs smooth. An erect, short and yellowish pilosity fairly abundant over the whole body, especially the abdomen. The legs and scapes have only a decumbent pubescence, which also occurs on the body, particularly the head. Black; mandibles reddish; antennae and legs rusty brown.

♀. 5·5 mm. Head almost exactly square; joints of the flagellum a little more elongated than in the ♂. Thorax narrower than the head. Dorsum of epinotum margined, flat transversely, convex longitudinally from end to end. Petiole as in the ♂, but without the convexity or distinct tooth below. Abdomen elongate. Otherwise like the ♂ (including the mandibles). Head finely striate on nearly the whole of the anterior portion, the large punctures stronger and more abundant than in the ♀. Epinotum and nodes of petiole densely reticulate-punctate and dull; dorsum of epinotum densely and transversely striate. The abdomen and rest of thorax smooth, sides of mesonotum with a few large punctures. Pilosity and colour as in the ♀, but the mandibles are reddish yellow, and the margins of the abdominal segments brownish. Deålated."

Natal. (Haviland.)

M. MINUTUM, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 5, p. 453, ♂, 1855.

"♂. 1·5-1·7 mm. Piceous, very shining, smooth; the mandibles, the antennae, excepting the club, the articulations of the legs and the tarsi yellowish. The whole body sparsely covered with erect, thick hairs. The mandibles are smooth, shining, and armed with four strong teeth. The clypeus, like the rest of the head, is smooth and very shining. The scape of the 12-jointed antenna does not quite reach back to the posterior margin of the head; the 1st joint of the flagellum is fairly long, not greatly thickened, the following joints are very small and short, the last three joints form the club, the 8th, 9th and 10th joints progressively larger, the terminal joint considerably longer than the 9th and 10th together. The thorax is smooth and very shining, the meso-epinotal suture alone is rather coarsely and longitudinally striate. The nodes of the petiole and the abdomen are smooth and very shining."

The type species does not appear to have been recorded from South Africa, but is represented by the following forms.

Race *BOERORUM*, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 442, ♀, 1910.

♂. 1.4–1.7 mm. Pale brown to dark brown, the mandibles, antennae and tarsi lighter. Very smooth and shining, with a very sparse and pale pilosity. This race differs from the type in the following particulars. The head is longer and narrower than in the type, rectangular, with the sides almost straight (convex in the type). The eyes are placed within the anterior third of the head. The nodes are a little thicker, and the 1st node is but slightly convex below. The thoracic impression is stronger and wider. The epinotum is a little more convex, and the carinae on the clypeus are less distinct and further apart in front.

♀. 3.2 mm. Black, legs and antennae brown, tarsi and articulations of the legs brownish, mandibles rusty brown. Head, mesonotum, and scutellum very sparsely and finely punctured; the rest of the body impunctate. Abdomen and sides of the nodes sparsely covered with a thin, long and pale pilosity. Head longer than wide; the ocelli small. Thorax narrow, much narrower than the head. Pronotum almost vertical in front, very slightly exposed in the middle, but more at the shoulders. Mesonotum one-third longer than wide; scutellum much longer than wide, and a little longer than half the mesonotum. Dorsum of epinotum very short, merging gradually into the declivity, which is very steep, transversely concave, feebly and transversely striate. Petiole as in the ♀. Abdomen elongate, the basal angles of the 1st segment pronounced, 1st segment as long as wide, the remaining segments wider than long. Deälated.

Orange Free State. (Wroughton.) Capetown. (Phillip.) (S.A.M., R.M., G.A. colls.)

Race *HOTTENTOTA*, Emery.

Ann. Soc. Ent. France, vol. 63, p. 26, ♀, 1895.

This form is unknown to me, and I am therefore obliged to reproduce the author's description, which is unfortunately based on a comparison with a Madagascan species.

"Closely allied to *imerinense*, Forel, from which it differs by the more angular epinotum, due to the more marked lateral ridges, and above all by the stronger petiole, the 1st joint of which has a longer peduncle; the nodes more robust, the 2nd wider behind than in front,

and consequently strongly narrowed behind. The proportions of the head and thorax, the sculpture and the hairs much as in *imerinense*. Capetown."

M. MEDINAE Forel, race, FRIDAE Forel.

Ann. Soc. Ent. Belg., vol. 49, p. 183, ♂, 1905.

"♀. 3 mm. Apart from its larger size, this form differs from the type by the more convex sides of the head, by the higher declivity of the epinotum; the latter is excavated above and behind to form a longitudinal channel which is much more distinct than in *hesperium* Em. The first node of the petiole is larger and higher than in the type of *Medinae*, and more cuneiform. Its summit is almost linear (or acutely angular). The legs are more slender. Very shining, except the epinotum which is opaque and reticulate-punctate. Mesonotum reticulate, slightly subopaque. Dark brown, the tarsi and antennae paler, as in *Medinae*. Willowmore, Cape Prov. (Brauns); host of *Braunsiella* Wasm."

M. SALAMONIS, Linn.

Syst. Nat. Ed. 10, p. 580, 1758.

This ant is found on the south shores of the Mediterranean, India, and Ceylon, and is represented in the Ethiopian Region by many subspecies and varieties, which show a considerable range of variation, in size, colour, and sculpture.

For purposes of comparison, I reproduce the description of the type form given in André's "*Hyménoptères d'Europe*."

"♂. 2.5-3.5 mm. Head, thorax, and petiole brownish red, more or less dark, very slightly shining or dull. The longitudinal sulcus (excavation) of the clypeus superficial. Head slightly, abdomen fairly, shining. Thorax deeply impressed between the meso- and the epinotum. More or less castaneous brown, with the head blackish, the abdomen brownish black.

"♀. 6-7 mm. Dorsal profile of the thorax straight, from its front margin to a little beyond the scutellum, without an angular break between the latter and the mesonotum. Pilosity short and not very close, but plainly visible; pubescence scanty. Entirely blackish brown, except the mandibles, the antennae, the tarsi, the thorax and the petiole, which are entirely or partly somewhat reddish brown. Head, thorax and petiole fairly strongly striate or rugose and dull. Abdomen very finely coriaceous, moderately shining.

"♂. 5 mm. External paramera of the genital armature very large,

lamine, prolonged backwards and curved downwards at their extremity. Petiole of the usual shape, its two joints not narrowed above to form transverse ridges, the 1st being cylindrical in front, thickened behind. The 2nd nodiform, rounded above, about as long as wide, and hardly wider than the 1st node. Black, tips of the mandibles and the antennae reddish yellow, tarsi and genital armature blackish brown. Pubescence almost absent; pilosity sparse, except at the apex and below the abdomen, where it is longer and more abundant. Head, including the clypeus and frontal area, thorax and petiole densely punctate-rugose, dull; abdomen very finely rugulose, fairly shining. Wings nearly hyaline or barely tinged with yellow; nervures and stigma pale yellow."

Var. *OPACIOR*, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 136, ♂, 1913.

♂. 2.8-3.4 mm. Yellowish brown; disc of pro-mesonotum and legs paler; abdomen black, with a submetallic gloss. Abdomen with a few thick, pale hairs. Dull. Head very finely and longitudinally reticulate-striate. Thorax closely and finely granulate (reticulate-punctate). Head nearly quadrate, a little longer than wide, and a little wider in front than behind. Scape short, not reaching the posterior margin of the head. Pronotum almost as wide as the head posteriorly. Pro-mesonotal suture faintly indicated, but more clearly than in *Junodi*. Dorsum of epinotum half as long as the pro-mesonotum; the declivity sub-vertical, the brow rounded. The epinotum is barely excavated, and the profile of its dorsum is only moderately convex, or almost flat. First node of petiole wedge-shaped; convex transversely in front, behind and above; one-quarter higher than the 2nd node. The latter is as wide as the 1st; widest in front.

♀ (hitherto undescribed). 4.6 mm. Black; mandibles, antennae, and legs yellowish brown. Head and abdomen with a scanty, short and decumbent pubescence; the nodes and abdomen with also a few pale, pilose hairs. Head, pro- and mesonotum and scutellum longitudinally reticulate-striate. Nodes of petiole and sides of epinotum reticulate-punctate; the epinotum above transversely striate. Abdomen very finely and rather obliquely striate. The pronotum is slightly exposed in the middle, much more at the shoulders. The epinotum is widest in front across the level of the stigmatic orifices, which are somewhat angularly prominent. The dorsum of the epinotum is flat at the extreme base, beyond which it is shallowly excavated, the excavation being continued over the declivity and forming moderately distinct lateral bosses or margins on each side. First node of petiole

as wide as it is long below; more compressed from front to back than in the ♀; the anterior face very feebly convex transversely, and also vertical; the posterior-dorsal face very oblique; the dorsal edge very convex transversely. The 2nd node as in the ♀.

Bulawayo. (S.A.M., R.M., G.A. colls.)

Var. *DISERTA*, Forel.

Deutsch. Ent. Zeit. Beiheft, p. 216, ♀, 1913.

♂. 1.9 mm. Reddish yellow, the head a little darker, the apical half of the abdomen brown. Head and nodes with a slight gloss, abdomen polished and shining, thorax dull. Head microscopically reticulatè-striate, thorax and nodes very finely reticulate. Abdomen very sparsely pilose and punctured. Head, excluding the mandibles, one-fifth longer than wide, the sides and the hind margin nearly straight. The scape just reaches the posterior margin. The eyes are situated just in front of the middle of the sides. The thorax is but moderately constricted at the meso-epinotal suture. The profile of the thorax is convex in front, horizontal above; the dorsum of the epinotum and of the pro-mesonotum are in the same plane, and slope backwards towards the declivity. The dorsum of the epinotum is about half as long as the pro-mesonotum, and very little longer than wide; the declivity is sub-vertical and forms a distinct angle with the dorsum. The anterior face of the 1st node is very short, and the peduncle is a little shorter than the node; the 2nd node is as wide as long.

Shiloh, S. Rhodesia. (R.M., G.A. colls.)

Race *JUNODI*, Forel.

Ann. Soc. Ent., Belg., vol. 54, p. 441, ♀, 1910.

♂. 3-3.4 mm. Dark brown, the legs, mandibles and basal half of the flagellum paler. Head, legs and antennae with a short decumbent pubescence, very short and scanty on the head. Clypeus, nodes and abdomen with a sparse, long and pale pilosity. Head, thorax and posterior faces of the nodes closely and finely granulate; abdomen smooth, with a faint submetallic, bluish gloss. Head, excluding the mandibles, as wide as long, the posterior angles rounded, the hind margin almost straight, the sides feebly convex. Eyes flat, situated at about the middle of the sides of the head. Median area of clypeus longitudinally striate, the carinae well defined. Mandibles quadridentate and moderately strongly and longitudinally striate. The scape extends slightly beyond the hind margin of the head. Prothorax in

front not much narrower than the head, the thoracic constriction at the meso-epinotal suture feeble, the suture shallow. Dorsum of epinotum three-fifths as long as the pro-mesonotum, twice as long as the declivity, the latter sub-vertical. The epinotum is barely excavated above. Peduncle of the 1st joint of the petiole shorter than the node the latter is cuneiform, higher than the 2nd node, and measured along its base, longer than wide. Second node slightly narrowed behind, a little wider than the 1st. This species greatly resembles *albopilosum*, var. *thales*, but may be distinguished from it by the thinner 1st node and the shorter peduncle.

Bulawayo. (S.A.M., R.M., G.A. colls.)

Race HERERO, Forel.

Schultze Reise, Südafrika, vol. 4, p. 16, ♀, ♀, 1910.

“♀. 2.6–2.8 mm. Head much longer than in the race *australe*, Em., quite one-quarter longer than wide in front, wider in front than behind, rather flatter below. Brownish black, antennae, legs and mandibles light brown or reddish brown. Resembling the var. *subnitida*, Em., in appearance, but the thoracic indentation less deep, the head smaller and flatter below, the 1st node thicker. The epinotum is also less arched, and lies lower.

♀. 4.6 mm. Head quadrangular, wider than the thorax. Mesonotum feebly convex. The scape reaches back as far as the posterior margin of the head. Head, thorax and petiole dull, closely reticulate-punctate; head also longitudinally striate. Abdomen shining, finely reticulate. Body clothed with short, fine hairs. Black; antennae, mandibles and legs reddish brown.”

Possession Island, German S.W. Africa. (Schultze.)

Race HERERO, var. WILLOWMORENSIS, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 245, ♀, 1914.

♀. 3 mm. Dark brown, pro-mesonotal disc lighter. Abdomen almost black. Nodes, legs, mandibles and the flagellum excepting the club, yellowish brown. Head, disc of pro-mesonotum, and abdomen shining, the rest of the body dull. Cheeks in front of the eyes finely and longitudinally striate, the rest of the head almost smooth, but with a few small and shallow piligerous punctures. Thorax closely and finely reticulate. Abdomen very sparsely pilose. Head, excluding the mandibles, one-sixth longer than wide, the sides convex, the posterior margin very feebly concave. The eyes are placed in front of the middle of the head. The scape extends back as far as

the occipital margin. The thorax is considerably constricted at the meso-epinotal suture, which is fairly deep. The pro-mesonotum is very convex transversely in front. The dorsum of the epinotum is barely half as long as the pro-mesonotum and slopes downwards towards the declivity, with which it forms a rounded but distinct angle. The declivity is nearly vertical and half as long as the dorsum. The epinotum widens at the brow of the declivity, where the margins are rendered somewhat tumid by the median excavation. Nodes similar to those of *Junodi*.

Willowmore, Cape Prov. (Arnold.) (S.A.M., R.M., G.A. colls.)

Race HERERO, var. BELLI, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 245, ♂, 1914.

♂. 2.8 mm. Exceedingly similar to var. *willowmorensis*, which it resembles in colour and sculpture. It is smaller than that variety, and the pro-mesonotum is narrower, and less convex at the sides behind the shoulders. The meso-epinotal suture is not so deep, and the thorax is less constricted at that point. The epinotum is also narrower across the brow of the declivity. The peduncle of the 1st joint of the petiole is also a little longer, the node more pointed above and narrower. The dorsum of the epinotum is flatter.

Willowmore, Cape Prov. (Arnold.) (S.A.M., R.M., G.A. colls.)

Race DAMARENSE, Forel.

Schultze Reise Südafrika, vol. 4, p. 17, ♂, 1910.

“ ♂. 1.9–2 mm. This bears a close resemblance to *M. setuliferum*, Forel, from which it differs by the much longer head (one-quarter longer than wide), and by the nodes. The 1st is higher and also wedge-shaped (but rounded above), the 2nd is much smaller and lower. The thorax is like that of *Salamonis*, whereas in *setuliferum* both the pro-mesonotum and the epinotum form equal longitudinal convexities. In *damarense*, only the pronotum anteriorly is abruptly convex, the dorsum of the thorax is but slightly convex, only feebly indented, and the angle between the two planes of the epinotum is fairly sharp, though rounded; the declivity is much shorter than the dorsum. The scape hardly extends beyond the occipital margin. The eyes are rather flatter and are placed more posteriorly than in *setuliferum*. Closely reticulate-punctate and dull (not so closely as in *setuliferum* and not rugose). Abdomen in greater part shining and smooth. Pubescent, with scanty and erect hairs on the abdomen.

Brownish; scape, legs, clypeus and mandibles yellowish brown. First half of the flagellum yellowish red."

Gawieb, Damaraland. (Schultze.)

Race *TERMITARIUM*, Forel.

Loc. cit., p. 17, ♂, ♀.

"♂. 2.3-2.5 mm. Reddish yellow, abdomen light brown. In sculpture and gloss it is intermediate between *salamonis*, i. sp., and the var. *subnitidum*, Em.; it is less shining and more sharply reticulate than the latter. Head elongate as in *herero*, the indentation of the thorax feeble, as in *damarense*; nodes as in *salamonis*, i. sp., but a little smaller and the 2nd node somewhat shorter. Pilosity as in the type species.

♀. 5.5 mm. Head rectangular, not wider or hardly wider behind than in front, the sides almost straight, a little wider than the thorax. Brown; mandibles, legs and antennae brownish red. Head and thorax dull, abdomen shining. Wings hyaline."

Kooa, Kalahari. (Schultze.) Nesting in part of a termites' mound.

Race *SUBOPACUM*, Smith.

Cat. Hymen. B.M., vol. 6, p. 127, ♂, ♀, 1858.

♂. 2.4 mm. Yellowish brown, the thorax a little paler; antennae and legs, except the tarsi, brownish yellow, tarsi dirty ochreous. Entirely dull. Head, thorax and nodes very finely reticulate, the abdomen microscopically so; the space between the frontal carinae faintly and longitudinally striate. Sparsely and very finely pubescent on the head, more densely on the legs and antennae. The abdomen with a few long, semi-erect hairs. Head a little wider in front than behind, the sides moderately convex, the posterior angles rounded. Clypeal carinae feeble, the space between them shining. Mandibles longitudinally striate, slightly shining, tridentate. The scape extends just beyond the occipital margin. Thorax narrower than the head, narrowed at the meso-epinotal suture, which is not deep. Dorsum of epinotum flat in profile, one-quarter longer than wide, three-fifths as long as the pro-mesonotum; the brow of the declivity, seen from the side, is fairly angular but rounded; the dorsum is shallowly and triangularly excavated. First node of petiole, seen in profile, wedge-shaped but strongly rounded above, and as long as the 2nd node; the latter almost quadrate, slightly wider in front than behind, and hardly wider than the 1st.

"♀. 5 mm. Opaque fusco-ferruginous; abdomen black, with the

base reddish, the articulations of the legs and the tarsi pale rufo-testaceous; the thorax in the middle in front, and the scutellum, of a brighter red; the epinotum with a deep excavation; abdomen oblong-ovate, thinly sprinkled with short pale glittering hairs."

This species makes rather small colonies, usually in sandy soil. Not common in Rhodesia. Bulawayo. (R.M., G.A. colls.)

Race *SUBOPACUM*, var. *ANCEPS*, Emery.

Ann. Soc. Ent. France, vol. 63, p. 24, ♂, ♀, 1895.

"Small forms with the head slightly shining behind, and the abdomen also shining; colour of the race.

Hamman's Kraal. (Simon.)"

Race *AUSTRALE*, Emery.

Bull. Soc. Ent. Ital., vol. 18, p. 363, ♂, ♀, 1886.

♂. 3.3-3.8 mm. Head, epinotum, and nodes reddish brown; pro-mesonotum paler, more yellowish brown. Mandibles yellowish red, abdomen piceous, legs and antennae brownish red, the tarsi paler, except the last joint, which is dark brown. Head and thorax dull, abdomen moderately shining. Head, thorax and petiole very finely reticulate, abdomen alutaceous. A very sparse and fine pilosity on the nodes and abdomen. Head barely longer than wide, slightly narrowed behind, the sides feebly convex, the posterior angles rounded, the posterior margin shallowly concave. The scape extends back as far as the posterior margin. The median area of the clypeus finely and longitudinally striate, the clypeal carinae obtuse. Mandibles longitudinally striate, quadridentate. Eyes placed at the middle of the sides of the head. Thorax narrower than the posterior margin of the head; pro-mesonotum, including the neck, almost twice as long as the epinotum, the latter one and a half times longer than wide, shallowly excavated, the excavation extending over the brow of the declivity, which is therefore concave transversely at that point. The profile of the epinotum above is convex, not flat, as in *subopacum*; the declivity is short and oblique. The peduncle of the 1st joint of the petiole is more than half as long as the node. The latter is one-quarter higher than wide, a little wider than long, convex in front and behind. The 2nd node is widest across its anterior third, barely wider than the 1st, and as long as wide.

♀. 5.7 mm. Colour and pilosity as in the ♂, but the abdomen is darker, with the apical margins pale brownish yellow, and the head is dark reddish brown. Dull; head finely and longitudinally striate;

mesonotum finely striate in front, alutaceous behind. Epinotum transversely striate. Abdomen alutaceous, with a slight silky sheen. Nodes of petiole posteriorly, transversely and minutely striate. Clypeus and frontal carinae longitudinally striate. Head quadrate, only very little longer than wide. Pronotum exposed only at the shoulders, which are rounded. Mesonotum one-third longer than wide; scutellum a little more than one-third the length of the mesonotum. Epinotum more deeply excavated than in the ♀, so that the margins at the junction of the declivity and dorsum form a distinct and elongate boss on each side. Nodes as in the ♀, but the 1st is more compressed from back to front, and its front face is more vertical and flatter than in the ♀. Wings pale smoky yellow; nervures pale brownish yellow.

Willowmore, Cape Prov. (Dr. Brauns.) (S.A.M., R.M., G.A. colls.)

RACE *DELAGOENSIS*, Forel.

Mitt. Schw. Ent. Ges., vol. 9, p. 87, ♀, 1894. Ann. Soc. Ent. Belg., vol. 54, p. 441, ♀, ♂, 1910.

♀. 3 mm. Dark reddish brown, the pro-mesonotum a little redder; mandibles, antennae and legs dark brownish yellow. Head slightly shining, microscopically reticulate-punctate, between the frontal carinae finely and longitudinally striate. Thorax and posterior faces of the nodes dull, closely reticulate-punctate, the sculpture stronger on the nodes than on the thorax. Abdomen smooth and shining. Head, excluding the mandibles, very little longer than wide; the posterior angles rounded, as wide behind as in front; the posterior margin almost straight or very feebly concave. The scape not extending back to the posterior margin by a distance equal to the length of the eye. Median area of clypeus with very indistinct carinae, the space between very shallowly excavated. Thorax decidedly narrowed at the meso-epinotal suture; dorsum of epinotum not quite half as long as the pro-mesonotum, a little longer than wide; the declivity is short, and forms a rounded but fairly distinct angle with the dorsum. Second node of petiole a little wider than long, hardly wider than the 1st, narrowed posteriorly. A very scanty pilosity on the nodes and abdomen.

“♀. 6 mm. Head a little wider than the thorax. Entirely dull; colour as in the ♀.”

“♂. 4.7 mm. Entirely black. Wings hyaline. Mesonotum altogether dull. The erect pilosity more abundant than in the type of the species. Flagellum brown; tibiae and tarsi pale yellow.”

Delagoa Bay. (Liengme.) Natal. (Haviland.) (G.A. coll., two
♀ presented by Dr. Forel.)

Race DELAGOENSE, var. GRAHAMSTOWNENSIS, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 245, ♀, 1914.

This differs from the race only in the following trifling details:
The colour is lighter, especially the pro-mesonotum; the legs and
antennae are more yellowish; the nodes are slightly less dull than in
the type of the race; and the sculpture of the thorax and nodes a shade
less strong.

Grahamstown. (S.A.M., G.A. colls.)

M. SETULIFERUM, Forel.

Schultze Reise Südafrika, vol. 4, p. 16, ♀, 1910.

“♀. 1.8–2.3 mm. Very similar to the Indian species *wroughtoni*,
Forel, but with the head much wider and without the metallic sheen
on the abdomen which is seen in that species. Mandibles slightly
shining, longitudinally striate, with three strong teeth and posteriorly
a very small tooth. Clypeus with two very distinct carinae, which
coalesce behind. Head rectangular, hardly longer than wide, feebly
concave behind, the sides feebly convex. Eyes convex, fairly large,
placed almost within the anterior third of the head. The scape just
reaches back to the hind margin of the head. The 3rd–8th joints of
the flagellum distinctly wider than long, the 2nd joint as wide as long.
Thorax as in *salamonis* and *wroughtoni*, but the transition between the
two planes of the epinotum more broadly rounded (the two planes
indistinctly separated). The two nodes equally high (in *salamonis* the
1st is higher); the 1st much wider than in *wroughtoni*, as wide as the
2nd, much wider than its peduncle in front, thicker above than in
wroughtoni. Abdomen in front somewhat concavely truncate. Head,
thorax and petiole dull; abdomen slightly glossy in front at the base,
shining above and behind, very finely coriaceous and reticulate-rugose;
legs smooth and shining. The head is exceedingly finely and closely
longitudinally striate, reticulate-punctate between the striae, the abdo-
men anteriorly similarly sculptured, but more feebly. On the head
and thorax are some very short, scanty, fine whitish and stiff hairs,
not easily observable; similar but longer hairs occur on the petiole
and abdomen. In addition there is a fine and short adpressed
pubescence, fairly sparse; scape and legs pubescent only. Brown;

antennae, legs, mandibles and disc of pronotum and mesonotum reddish to brownish yellow. The club of the antenna dark brown."

Khakhea, Kalahari. (Schultze.) Nest in sand.

Var. NOTULA, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 441, ♀, ♂, 1910.

♀. 2.2 mm. Dark reddish brown, pro-mesonotum lighter, more rusty red, legs paler, especially the tarsi, mandibles yellowish rusty red. Eyes rather smaller and placed further back than in the type species. Head slightly narrower. Epinotum and mesopleura strongly reticulate-punctate. Second joint of flagellum a little longer than wide.

♂. 3.5 mm. Head much wider than long; the posterior margin nearly straight, a little narrower than the thorax and, like it, dull. Abdomen fairly shining. Wings hyaline, nervures pale. Black; antennae brown; tarsi, tibiae, articulations and margins of the mandibles yellow. Hairs on head and thorax fairly abundant and erect. Tibiae and scapes with adpressed pubescence."

Bulawayo; Springvale, S. Rhodesia. (S.A.M., R.M., G.A. colls.)

M. PHARAONIS, Linn.

Syst. Nat., Ed. 10, i, p. 580, 1758. Say (*Myrmica molesta*), Boston Journ. N.H., p. 626, ♀, 1838. Smith (*Myrmica domestica*), List. Brit. Anim. B.M., vi, p. 119, ♂, 1851. Smith (*Myrmica domestica*), Trans. Ent. Soc. London (2), iii, p. 130, ♀, ♀, ♂, 1855.

♀. 2.5-3 mm. Reddish yellow, the apical half of the abdomen and sometimes the sides of the whole of the 1st segment brownish. A few scattered pilose hairs on the thorax and abdomen. A microscopic pubescence on the legs and antennae. Head, thorax and nodes closely and minutely granulate, abdomen and legs smooth and shining. Head, thorax and nodes dull. Head ovate, excluding the mandibles, one-quarter longer than wide, the sides strongly, the posterior margin feebly convex. Eyes situated in front of the middle of the head. The scape almost reaches the posterior margin. Clypeal carinae fairly distinct. Mandibles faintly striate. Pro-mesonotum convex, rounded in front and at the sides, narrowed posteriorly. The thorax constricted at the meso-epinotal suture, which is deep. Dorsum of epinotum longer than wide, about three-fifths as long as the pro-mesonotum, the declivity almost vertical, shorter than the dorsum. The pro-mesonotum and epinotum, seen from the side, are distinctly convex.

The 1st node of the petiole cuneiform, rounded above, the peduncle nearly as long as the node; 2nd node wider in front than behind, wider than the 1st node, and slightly wider than long.

♀. 4.3 mm. Reddish yellow; scutellum, median portion of metanotum, declivity and sides of epinotum, and the mesopleura dark brown. The posterior face of the 1st node slightly brown. Colour of the abdomen similar to that of the ♂ but darker. Pilosity, pubescence and puncturation as in the ♂; a longitudinal median area on the anterior half of the mesonotum finely striate. Head, excluding the mandibles, as wide as long. The eyes moderately large, placed in the middle of the sides. Pronotum not exposed dorsally; mesonotum very slightly wider behind than in front, convex anteriorly, one-third wider than long. Dorsum of epinotum very short, the declivity strongly reticulate, its upper half excavated and concave, its lateral margins tumid. The upper half of the declivity is very steep, the lower half vertical. Nodes of petiole similar to those of the ♂, but the peduncle of the 1st joint is shorter, and the node is also shorter and more compressed from front to back, so that the dorsal edge is linear. The 2nd node is wider than in the ♂, quite two-thirds wider than long. The anterior angles of the abdomen more rounded than in the ♂.

“♂. 3 mm. Dark brown; mandibles, scapes, apical half of the flagellum, femora and tibiae yellowish brown; basal half of the flagellum, tarsi and apex of the abdomen pale yellow. Pilosity long, very sparse and light yellow. Head closely and finely punctured. Clypeus convex, obtusely rounded behind, not carinate, finely shagreened. Frontal sulcus extending as far as the anterior ocellus. Thorax punctate above and in front; on the metanotum and the sides of the thorax the punctures are so shallow that the sculpture appears merely shagreened. Petiole punctured. Abdomen almost smooth and very shining, the rest of the body with only a faint gloss.”

Durban. (H. Bell-Marley.) Capetown. (R. Lightfoot.) The original home of this cosmopolitan species is probably South America. It is frequently found in hothouses in temperate countries.

(S.A.M., R.M., G.A. colls.)

M. OSCARIS, Forel, var. NUPTIALIS, Forel.

Mitth. Schweiz. Ent. Ges., vol. ix, p. 86, 1894. (Var.) Deutsch. Ent. Zeit. Beiheft, p. 216, ♂, 1913.

♂. 1.6-1.8 mm. Dirty brownish yellow, the antennae and tarsi paler. The median dorsal area of the 1st abdominal segment is

brownish yellow, the rest of the abdomen brown. Very smooth and shining. Pilosity as in *springvalense*. Head nearly one-quarter longer than wide, the sides moderately convex. First joint of the flagellum as long as the 2nd, 3rd and 4th together; the club a little longer than the rest of the flagellum. The scape is shorter than in the type species, and the nodes of the petiole, particularly the 1st, higher and shorter.

Bembesi and Bulawayo. (S.A.M., R.M., G.A. colls.)

M. OSCARIS, race MUSICUM, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 442, ♂, ♀, 1910.

“♂. 1.5 mm. Head a little narrower than in the type, a little smaller relatively to the body. Club of the antenna much thicker. The 9th joint of the flagellum is much smaller than the 10th, the latter and the 11th considerably swollen (in the type species the 9th is almost as wide as the 10th and the last two joints are only slightly swollen). Otherwise like *Oscaris*, but of a dull brownish yellow, the thorax dirty yellow. The scape is short, much shorter than in *minutum* and *floricola*; the peduncle of the 1st node shorter than in *floricola*.”

“♀. 2.8 mm. Head as in the ♂, longer than wide; eyes large. Thorax high, narrower than the head. Nodes rounded, the 1st with a little tooth below. Dark brown; mandibles, antennae and tarsi dirty yellow.”

Natal. (Haviland.)

M. OSCARIS, race SPRINGVALENSE, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 163, ♂, ♀, 1913.

♂. 2 mm. Smooth and shining. Head reddish brown, legs pale brown, tarsi yellowish, abdomen and often also the nodes dark brown, the median area of the 1st abdominal segment above, more or less yellowish, thorax and mandibles dark ochreous, antennae brownish yellow except the club, which is brown. Head and thorax very sparsely and shallowly punctured, the punctures piligerous. Head with a sparse and fine decumbent pubescence, the rest of the body with a few long and pale pilose hairs. Head, including the closed mandibles, one-sixth longer than wide, the posterior angles rounded, the posterior margin shallowly concave, the sides nearly straight. Scape short, not reaching the posterior margin by the length of the eye. Club of antenna thick, distinctly longer than the rest of the flagellum, the apical joint as long as the six preceding joints taken together;

3rd-6th as wide as long. Clypeal carinae sharp, well defined. Mandibles sparsely and coarsely punctured, acutely tridentate. Eyes rather flat, placed in front of the middle of the head. Pro-mesonotum convex, widest in front and not much narrower than the head. Thorax strongly constricted at the meso-epinotal suture, which is deep and wide. The dorsum of the epinotum passes into the oblique declivity by a gradual curve. Seen from the side, the dorsum of the epinotum is convex lengthwise, that of the pro-mesonotum convex only in front. First joint of petiole with the peduncle short, about half as long as the node, which is sub-conical, longer than wide and higher than the 2nd node. The 2nd node is a little wider than the 1st, wider in front than behind, and as wide as long.

Springvale, Matopos, S. Rhodesia. (S.A.M., R.M., G.A. colls.)

Race *SPRINGVALENSE*, var. *PATERNA*, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 248, ♀, 1914.

♀. 2.1 mm. Dark yellowish brown, the tarsi pale. A stouter insect than the type of the race. The club of the antenna is not longer than the rest of the flagellum, hardly as long; 3rd-8th joints distinctly wider than long. The nodes of the petiole are much wider than in the race, and the 1st node has the anterior face less convex, and is as wide as long; it is also less conical and more wedge-shaped. The 2nd node is transversely oblong, with rather pronounced anterior lateral angles, almost twice as wide as long.

Table Mountain, 1800 ft. Under stones in damp soil. (R.M., G.A. colls.)

M. SCHULTZEI, Forel.

Schultze Reise Südafrika, vol. 4, p. 18, ♂, ♀, 1910.

♀. 1.5-2.1 mm. Brownish yellow; the thorax a little paler; legs, antennae and the basal half of all the abdominal segments pale yellow. Smooth and shining, with scanty and very small piligerous punctures. Head about one-quarter longer than wide, the sides moderately convex, posterior angles rounded, posterior margin shallowly concave. The anterior margin of the clypeus feebly excised in the middle, the clypeal carinae sharp, with a longitudinal impression between them. Mandibles quadridentate, shining, sparsely and feebly punctured. Eyes large, placed a little in front of the middle of the head. The scape does not extend back as far as the posterior margin of the head. 3rd-7th joints of the flagellum as wide as, or a little wider than, long; the 1st joint as long as the three following taken together; the club as

long as the rest of the flagellum. Thorax moderately constricted. Dorsum of epinotum not quite half as long as the pro-mesonotum. The latter and the epinotum are feebly convex lengthwise, the whole thorax sloping steeply from front to back. The dorsum of the epinotum twice as long as the declivity, the one merging into the other by a gentle curve. First node of petiole wedge-shaped, rounded above, higher than the 2nd, about as wide as long and twice as long as its peduncle. Second node sub-quadrate; narrower behind than in front; hardly wider than the 1st.

“ ♀. 4.7 mm. Head quadrate; wider than the thorax. The scape extends back just as far as the posterior margin of the head. Mesonotum narrow; the dorsal profile straight. Epinotum almost cuboid, with two longitudinal swellings. Head, thorax and petiole very slightly shining, almost dull; partly reticulate-punctate; partly longitudinally striate, especially the front of the vertex. Black; mandibles, antennae and legs reddish (dealted). Otherwise like the ♂.”

German S. W. Africa. (Schultze.) Grahamstown. (J. Hewitt.) (S.A.M., R.M., G.A. colls.)

M. ARNOLDI, Forel. (Plate V, fig. 60.)

Ann. Soc. Ent. Belg., vol. 57, p. 137, ♀, 1913.

♀. 1.6–1.9 mm. Reddish or amber yellow, the sides of the thorax and the nodes a little darker. Very smooth and shining; almost impunctate. A few long and thin pilose hairs on the thorax, nodes and abdomen, the hairs oblique and flavous. Head one-fifth longer than wide, the sides feebly convex, the posterior angles strongly rounded, the posterior margin shallowly concave. Eyes placed a little in front of the middle of the sides of the head. The scape extends back almost to the posterior margin. The club is not thick; the 1st joint of the flagellum is nearly as long as the five following joints taken together; the 2nd joint is a little longer than wide; the 3rd–8th wider than long. The clypeal carinae are well defined; the anterior margin of the median area almost straight or very feebly concave. Mandibles smooth, punctured, quadridentate; the apical tooth acute, the innermost indistinct. Thorax rather strongly constricted at the mesoepinotal suture. Dorsal profile of both pro-mesonotum and epinotum convex. Epinotum a little more than two-thirds the length of the pro-mesonotum, its dorsum longer than the declivity, which is oblique. The 1st node of the petiole is more squamiform than usual for the genus, and is not much thicker at the base than it is above. It is about one and a half times as high as long, and one and a half times

wider than long; the posterior face convex, the anterior nearly vertical, convex transversely. The 2nd node is one and a quarter times higher than long, rounded above, as wide as, but not so high as the 1st, and a little wider than long.

Matopo Hills, S. Rhodesia. Running over the branches of a tree (species unidentified). This tree has a dark green bark, covered with a thin yellowish and parchment-like outer skin, which is also waxy. The colour of the ant matches that of this skin very closely, so that even when moving about it is difficult to detect. I have never taken this species except on this particular kind of tree, and it is not unlikely that the ant feeds on the waxy exudation. (S.A.M., R.M., G.A. colls.)

M. LEIMBACHI, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 246, ♀, 1914.

♀. 2 mm. Pale ochreous; the legs very pale; the apical half of the abdomen brownish yellow. Smooth and shining, impunctate, excepting a few feeble punctures on the vertex. Pubescence absent, except on the legs. Pilosity short and very scanty, more decumbent than in *Arnoldi*. Head very little longer than wide; the sides distinctly convex; the posterior margin straight. Eyes situated within the anterior third of the head. Median area of clypeus projecting somewhat forward; the carinae rather feeble, the space between them almost flat. Mandibles shining, sparsely and coarsely punctured, quadridentate. The scape does not extend back quite as far as the occipital margin. First joint of flagellum as long as the four succeeding joints taken together; 3rd-8th joints a little wider than long. Head almost twice as wide as the pro-mesonotum. Thorax similar to that of *Arnoldi*, but narrower, and with the meso-epinotal suture deeper. The epinotum is two-thirds as long as the pro-mesonotum. The dorsum of the epinotum not much longer than the declivity, as high as the mesonotum, and very convex. The node of the 1st joint of the petiole is conical and widely rounded above, its length below about one and a quarter times longer than its peduncle, one and two-thirds as long as wide, not much higher than the 2nd node, the anterior face subvertical, the posterior face very oblique. The 2nd node is globose, widest in the middle, barely wider than the 1st. Abdomen oval.

Capetown. (S.A.M., G.A. colls.)

M. PACIS, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 343, ♀, 1914.

“♀. 1.9 mm. Smaller and a little paler than *Leimbachi*, but not so pale as *Oscaris-excensurae*. It is distinguished from both by the profile being subtruncate in front of the clypeus, which gives it a false appearance of a *Bondroitia*. In profile, the mandibles extend very little beyond the clypeus. The frontal carinae behind form a strong curve with their anterior lobes, which are situated on the subtruncate portion. The eyes, placed within the anterior third of the head, are fairly large but almost unpigmented. The abdomen has some brown bands, not very distinct. The shape of the petiole and thorax, like the sculpture and other characters, is identical with that of *Leimbachi*, but the head is slightly narrower. The eyes are composed of about 15–20 facets.”

Capetown, ex S.A. Mus. coll.

M. BRAUNSI, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 7, ♀, 1901.

“♀. 1.4–1.6 mm. Reddish yellow or yellow, the abdomen more or less brownish, the 1st segment above yellow, brownish at the sides and near the posterior margin. Masticatory margin of the mandibles reddish brown, the last four joints of the flagellum and also the hind margin of the head slightly brownish. Very sparsely pilose, with fairly long erect hairs. Very smooth and shining, sparsely punctured with piligerous punctures, the cheeks in front longitudinally striate, the frontal carinae somewhat striate, the meso-pleura below finely and shallowly reticulate. Mandibles quadridentate. The head very distinctly longer than wide. The clypeus has a rounded anterior margin; no median groove, teeth, or carinae; but the posterior lateral margins, between the antennal sockets, somewhat projecting. Antennae 12-jointed; the apex of the scape is nearer to the posterior angles of the head than to the eyes; the 2nd–8th joints of the flagellum very small, much wider than long. The 1st joint of the club as wide as long or a little wider, the second a little wider than long, the last joint nearly twice as long as the first and second together. The eyes are rather small, placed in front of the middle of the head. The thorax is constricted at the meso-epinotal suture; the dorsum of the epinotum passes arcuately into the declivity, which is but half as long. The 2nd joint of the petiole is somewhat wider than long, distinctly lower than the 1st joint, and not wider, or hardly wider, than the 1st.

This species stands close to *M. dispar*. In this species the head is

somewhat narrower. The 1st and 2nd joint of the antennal club not longer than wide (in *dispar* both are distinctly longer than wide, the first joint of the club decidedly smaller than the 2nd), the last joint of the club distinctly wider than in *dispar*, and nearly twice as long as the two joints preceding taken together, whereas in *dispar* it is certainly clearly, but very little longer than the two preceding."

Port Elizabeth. (Dr. Brauns.) In hollow stems.

Var. *SHILOHENSIS*, Forel.

Deutsch. Ent. Zeit. Beiheft, p. 217, ♀, 1913.

♀, 1.4 mm. Colour as in the type. The scape is shorter, and the thorax is less constricted at the meso-epinotal suture. The head is more quadrangular, the sides straighter. The dorsal profile of the thorax is almost straight. The 3rd-7th joints of the flagellum twice as wide as long, the 2nd and 8th joints one and a half times as wide as long. The ventral surface of the 1st node is strongly convex, the node is but slightly higher than the 2nd.

Shiloh, S. Rhodesia. In grassy soil. (G.A. coll.)

M. DESTRUCTOR, Jerdon, race *KALAHARIENSE*, Forel.

Madras Journ. Litt. and Sc., vol. 17, p. 105, ♀, 1851. Race,

Schultze Reise Südafrika, vol. 4, p. 18, ♀, 1910.

"♀. 1.7-3 mm. Differs from the subspecies *gracillimum*, Smith, by the shorter scape, which even in the smallest ♀ by no means reaches the posterior margin of the head, and by the very small, flat eyes, which comprise only 16-18 distinct facets (quite 40 in the larger and more convex eyes of the type species and the race *gracillimum*). The head is even more strongly and closely punctured than in *gracillimum*. Brownish yellow-red; abdomen brownish. Upper surface of the first two abdominal segments, antennae and legs yellowish. Polymorphic as in *gracillimum*. Larger than *dispar*, Em., in which the epinotum is smooth—in this species transversely rugose.

"Kooa-Sekgoma, Kalahari. (Schultze.) In a small subterranean sand-nest; also found on another occasion in the nest of *Hamitermes runconifer*, attacking *Ocymyrmex picardi*."

M. DISPAR, Emery.

Ann. Soc. Ent. France, vol. 63, p. 24, ♀, 1895.

"♀. *Maxima*, 3 mm. Testaceous; abdomen fuscous, very shining, and sparsely punctured. Head hardly longer than wide; the cheeks

as far as the eyes, and the front of the head, striated. There is a median sulcus, and the occipital region is transversely striate. Mandibles tridentate; antennae as in the ♀ minima; thorax moderately stout; the meso-epinotal suture impressed; the epinotum distinctly angulate; the meso- and metapleura punctate, dull; dorsum of the declivity transversely rugulose, nodes of the petiole transverse.

“♀. Minima, 1.5–1.7 mm. Pale, testaceous, pellucid; abdomen fuscous, very shining, very scantily punctured with piligerous punctures. Head moderately elongate; cheeks striated anteriorly. The first two joints of the antennal club subequal, the last joint a little longer than the two preceding together; mesopleura reticulate-punctate. Epinotum obtusely angulated between the dorsum and the declivity; nodes of petiole small and subequal.

“Makapan. (Simon.)”

M. AMBLYOPS, Emery, race BULAWAYENSE, Forel.

Bull. Soc. Ent. Ital. xxvi, 1894, p. 148. (Race) Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 247, ♀, 1914.

1.8–4 mm. Strongly polymorphic, having the facies of a *Solenopsis*. The smaller ♀ ♀, 1.8–2.3 mm., differ from the larger ♀ ♀ in having the head longer and the sides less convex, but a complete transitional series can be found between one extreme and the other.

♀. Maxima, 4 mm. Ochreous, somewhat reddish, the abdomen darker, with the apical margins and the greater part of the sides of the segments fuscous. The nodes above and the masticatory margin of the mandibles slightly brownish. A short and rather sparse pubescence on the head and thorax, much longer and denser on the legs and antennae. Margin of clypeus, thorax, nodes, and abdomen with a long, pale, yellowish and sparse pilosity. Smooth and shining. Head strongly but sparsely punctured (as in *Solenopsis punctaticeps*); promesonotum more feebly and sparsely punctured. The mesopleura distinctly reticulate-punctate; the sides of the epinotum above shallowly and transversely striate, obliquely striate below. Abdomen very smooth and shining, each pilose hair is inserted in a small puncture. The head in front, on each side of a smooth area surrounding the antennal sockets, is obliquely and closely striate, the striated area extending back as far as, and a little below, the eyes. Head, excluding the mandibles, hardly longer than wide, the sides very convex, the posterior angles strongly rounded, the occipital margin shallowly concave. The eyes are rather small and placed well within the anterior half of the head. The median area of the clypeus is

feebly and longitudinally striate on each side, hardly carinate, the anterior margin straight. The frontal carinae are short and parallel; the scape of the antenna short, extending back hardly as far as the posterior third of the head; the club of the flagellum thin; the 1st joint of the flagellum not longer than the 2nd, 3rd and 4th taken together; 3rd-8th joints about as long as wide; all the joints of the club much longer than wide. Mandibles shining, coarsely striatopunctate, quadridentate. Thorax moderately constricted at the mesoepinotal suture, which is deeply impressed and large. The dorsal profile of the pro-mesonotum is very convex; that of the epinotum flat, sloping posteriorly. The dorsum of the epinotum is broad, almost as wide as long, and a little less than half as long as the pro-mesonotum. The declivity is almost vertical, the brow very shallowly impressed in the middle. The peduncle of the 1st joint of the petiole nearly as long as the node, the latter as wide as long, not higher than the 2nd. The 2nd node is a little wider than the 1st, wider than long, narrowed behind, subglobose.

♀. *Minima*, 1.8 mm. Similar to the ♀ *maxima*, except in the following characters: The colour is slightly paler; the head is longer, quite one-quarter longer than wide, the sides almost straight or very feebly convex; the anterior angles of the head not striate; the scape longer, extending well beyond the posterior third of the head; the 3rd-8th joints of the flagellum distinctly wider than long.

♀. (Hitherto undescribed.) 8 mm. Head and antennae reddish yellow, legs yellow, the rest of the body reddish brown. Smooth and shining. Pilosity as in the ♀, but there are some short pubescent hairs on the abdomen intermixed with the pilosity. Head subquadrate, coarsely punctured, and striate, the striae rather feeble on the vertex, and converging behind at the ocellar region. The eyes are large, placed just in front of the middle of the sides. The ocelli are set far back, the posterior margin of the head subtruncate behind the posterior ocelli. A median longitudinal sulcus extends from the posterior angle of the clypeus to the anterior ocellus. Pronotum hardly exposed above. Mesonotum convex and narrow in front, one third longer than wide. Dorsum of epinotum short, passing by a steep curve into the vertical declivity. First joint of petiole with the peduncle shorter than in the ♀; the 2nd node less rounded; the sides parallel and not convex; subquadrate. Abdomen oblong, as long as the thorax and nodes together. Wings slightly yellow, the nervures yellow, the stigma brownish yellow; 1 cubital cell.

♂. (Hitherto undescribed.) 4.1 mm. Black; antennae, mandibles and tarsi flavous; femora and tibiae brown. Smooth and

shining; head duller. Pilosity scanty, longer on the scutellum than on the mesonotum. Head shallowly and longitudinally striate, transversely so between the ocelli, subquadrate, the sides moderately convex, the posterior angles rounded. The eyes are very large and convex, occupying the whole of the anterior half of the head and touching the base of the mandibles; the latter short and narrow, feebly dentate. Clypeus convex, the median area raised into a prominent tubercle. The 13-jointed antennae are densely covered with a stiff, almost bristly, erect pubescence. They have a distinctive structure unlike that of any other ♂♂ of this genus which are known to me, excepting *M. Emeryi*, and resembling that of *Solenopsis*. The antennae are setaceous, thinning considerably towards the apex. The scape is very short, almost quadrate or only a very little longer than wide, not longer than the 1st joint, which is wider than the scape, and *globose*, as in *Solenopsis*. The 2nd joint is a little longer than the 1st or 3rd; the 2nd-4th joints cylindrical and twice as long as wide, their inner margins convex, the outer straight; the remaining joints are all much longer than wide, and flattened. Pronotum not exposed above; the mesonotum very convex in front, horizontal behind, as wide as long, widest across the tegulae. The scutellum convex, wider than long, sloping backwards. The dorsum of the epinotum twice as wide at the base as it is long, with a prominent boss on each side above the vertical declivity. First node of petiole flattened, the anterior face vertical, the posterior-dorsal face as long as wide, widest in front; seen from the side, the node is shorter than its peduncle. Second node wider than the 1st, convex above, transversely ovate. Legs slender, not long. Wings as in the ♀.

Hillside, Bulawayo. (A. M. Macgregor.) This species forms very populous colonies, and almost invariably the nest is placed under stones which also cover the nests of a small species of termite (species unidentified). The galleries of the two nests are not in free communication, and the termites are quickly attacked if the dividing walls are broken down.

(S.A.M., R.M., G.A. colls.)

M. (sub-genus MITARA, Forel) EXIGUUM, Forel, var. BULAWAYENSE, Forel.

Mitth. Schweiz. Ent. Ges., vol. 9, p. 84, 1894. (Var.) Deutsch. Ent. Zeit. Beiheft, p. 217, ♀, 1913.

♀. 1.5 mm. Brownish yellow, the apical half of the abdomen dark brown, legs, antennae, mandibles and anterior margin of head yellow.

Smooth and shining. Head and thorax very sparsely and finely punctured. Head about one-fifth longer than wide, the sides almost parallel. Antennae 11-jointed, the scape extending a little beyond the posterior fifth of the head; 3rd-7th joints of flagellum one and a half times wider than long; the 8th and 9th as wide as long. Clypeus distinctly bicarinate. The eyes small, set within the anterior half of the head. Mandibles shining, with a few large punctures, tridentate. The thorax is fairly strongly constricted at the meso-epinotal suture; the pro-mesonotum is twice as long as the epinotum. The dorsum of the latter one-third longer than the declivity, which is oblique and passes into the dorsum by a low curve. The dorsal profile of the pro-mesonotum is not very convex. The 1st node of the petiole cuneiform, about as wide as long, the apex rounded, the peduncle half as long as the node. The 2nd node is about as wide as long, or a little wider, wider in front than behind, reversed trapeziform.

Dr. Forel distinguishes this form from the type by the more convex sides of the head, the shorter nodes and the wider 2nd node, which is "much wider than long (as long as wide in the type)." The latter feature is not appreciable by measurement in the specimens which I have before me.

Bulawayo. (G.A. coll.)

M. (sub-genus MITARA) *ATOMUS*, Forel, race *MICTILIS*, Forel.

(Race) Zool. Jahrb. Syst., vol. 29, p. 252, ♀, ♀, 1910.

♂. 1.5 mm. Pale ochreous, the sides and apical margins of the abdominal segments slightly brownish. Smooth and shining. Head and thorax very sparsely and finely punctured. Head very sparsely pubescent, and with the rest of the body, also very sparsely pilose. Head, excluding the mandibles, nearly one-sixth longer than wide, the sides moderately convex. Mandibles rather long, shining, coarsely and sparsely punctured, with 3 or 4 teeth. The clypeus produced a little forwards; the median area bicarinate, slightly concave between the carinae, the anterior margin feebly sinuate. Eyes not very small, placed a little in front of the middle of the sides. Antennae 11-jointed, the scape extending back as far as the posterior fourth of the head, the club distinctly longer than the rest of the flagellum; 1st joint of flagellum as long as the four following joints taken together, 3rd-6th joints twice as wide as long. Thorax not strongly constricted at the meso-epinotal suture. The 1st node of the petiole is only a little higher than the 2nd, narrower and longer than that of *exiguum*, *bulawayense*, and longer than wide. The 2nd node subglobose, the

sides convex (not straight as in *exiguum*, *bulawayense*), a trifle wider than the 1st.

♀. 3.8 mm. Yellowish or reddish brown; legs, antennae and mandibles dark ochreous. Head somewhat quadrangular, one-quarter longer than wide. Thorax narrow, two and a half times as long as wide, almost parallel-sided or only slightly convex. Pronotum slightly exposed above. The brow of the declivity of the epinotum rounded, the dorsum short and about half as long as the vertical declivity. The 1st node of the petiole is wider and more flattened above than in the ♀. The 2nd node is more convex above and at the sides than in the ♀, and is two-thirds longer than wide. Otherwise like the ♀. (Deälated.)

Durban. (Arnold, Cooper.) (R.M., G.A. colls.)

SUB-TRIBE SOLENOPSIDINI, Emery.

GENUS DIPLOMORIUM, Mayr.

Ann. K.K.N.H. Mus., Wien, vol. 16, p. 16, 1901.

Characters.

♂. Antennae 11-jointed; clypeus without carinae. Pro-mesonotal suture almost effaced; meso-epinotal suture deep. Epinotum unarmed, its dorsum slightly excavated as in some species of *Monomorium*. Middle and hind tibiae without calcaria.

♀. Considerably larger than the ♂. Antennae 11-jointed. Pronotum vertical, not exposed dorsally. Epinotum unarmed. Discoidal cell of anterior wing large, radial cell open.

♂. Unknown.

D. LONGIPENNE, Mayr.

Loc. cit., pp. 16-18, ♂, ♀.

“ ♂. 1.8-1.9 mm. Pale brown, the mandibles and tarsi brighter. A sparse and moderately long pilosity on the body; on the legs and antennae shorter, but more abundant. The upper surface of the head also has shorter and more abundant hairs, intermixed with the longer ones. Polished and shining; the mandibles partly longitudinally striate and with a few piligerous punctures; the sides of the mesothorax reticulate-punctate. Head rectangular, but little longer than wide, with rounded posterior angles and somewhat convex sides. Mandibles with a very oblique masticatory margin, armed with 3 larger teeth in front, and 3 or 4 smaller and less distinct teeth

behind. Clypeus moderately large, without carinae or teeth, convex transversely and lengthwise, the posterior third inserted between the frontal carinae, the anterior margin convex. The frontal carinae are very short, fairly narrow, not diverging much behind; they are farther apart and the posterior portion of the clypeus is wider than in *Solenopsis*. The scape of the 11-jointed antennae does not extend back as far as the hind margin of the head, the flagellum similar to that of *Solenopsis*, but the antepenultimate joint is relatively larger; the 2nd-7th joints of the flagellum small and wider than long, the 8th distinctly larger than the preceding, as long as wide, the 9th large, very little longer than wide, the last joint almost three times as long as the preceding; the structure of the flagellum being intermediate between that of *Monomorium* and of *Solenopsis*. The antennal fossa small. The frontal area small and triangular. The frontal sulcus is very short. The moderately large and feebly convex eyes lie in front of the middle of the head. No ocelli. The posterior margin of the head is straight, but is strongly hollowed out at the occipital foramen. The thorax is like that of *Solenopsis*, the pro-mesonotal suture hardly defined; the meso-epinotal suture deep. The dorsum of the epinotum merges by a gentle curve into the declivity. A transversely concave and shallow longitudinal impression begins at the base of the epinotum, widens and passes over into the declivity. The legs of medium length. The petiole is shaped as in *Solenopsis*, the 1st joint distinctly pedunculate, the ventral lamella simple, the node transverse; the 2nd joint is wider than the 1st, much narrower in front than behind, somewhat bell-shaped. Abdomen ovate, transversely truncate at the base.

♀. 9.5-10 mm. Very shining and pale brown. The pilosity is fairly abundant, particularly on the legs. The adpressed pubescence is absent from the head and thorax, scanty on the abdomen, the ventral surface of the 2nd node of the petiole is densely pilose, the hairs short and exserted. Mandibles coarsely striated, sparsely and strongly punctured. The clypeus is transversely rugose at the sides, smooth in the middle; the cheeks and inner borders of the eyes longitudinally striate, the frons and vertex sparsely punctured with deep and large punctures, the mesonotum and scutellum polished, with few punctures, the sides of the pronotum and the mesopleura polished; the concave sides of the scutellum, the metanotum, the sides of the metathorax and of the epinotum more or less striato-rugose, the latter also with fairly abundant punctures bearing short and erect hairs. The anterior upper surface of the finely rugulose and punctured 1st node bears similar hairs, the 2nd node is polished on the upper surface, with a

few pilose punctures, striato-punctate in front and pubescent. The abdomen is polished and sparsely punctured. The anterior wings are slightly greyish yellow, nervures and stigma brownish yellow. Head with the closed mandibles triangular and rounded, narrower than the thorax across the tegulae; without the mandibles, a little wider than long. Clypeus triangular, strongly convex transversely, without carinae, the anterior margin feebly sinuate on each side, so that the median portion projects in an obtuse angle; the posterior portion of the clypeus between the frontal carinae separated off from the front portion by a transverse impression. A small frontal area present, with a frontal sulcus extending from it to the anterior ocellus. . . . The scape extends back as far as the posterior ocelli; the flagellum with a distinct 3-jointed club, the 1st joint of the flagellum two and three-quarter times longer than wide, the 4 following joints as long as wide, the 6th a trifle longer than wide, the 1st and 2nd joints of the club distinctly longer than wide, the last joint almost as long as the three preceding taken together. The fairly large and convex eyes lie in front of the middle of the head. The posterior margin of the head straight. The thorax is widest in the middle; the pronotum vertical, the mesonotum in front and at the sides strongly convex, in the middle feebly so; the dorsum of the epinotum sloping, the declivity vertical and with a rounded brow. The 1st joint of the petiole has a little tooth below, the 2nd is even more campaniform than in the ♀, it is about twice as wide as long and twice as wide as the 1st node, rounded at the sides, widest just in front of the hind margin. The abdomen is a little more than twice as wide as the 2nd node, and not quite twice as long as it is wide."

Port Elizabeth. (Dr. Brauns.) Under stones in the ground.

GENUS SOLENOPSIS, Westwood.

Ann. Mag. Nat. Hist., vi, p. 86, 1841.

Characters.

♂. Maxima. Antennae 10-jointed, with a well-defined and fairly thick two-jointed club. Mandibles thick, edentate or with two or three blunt teeth. Head quadrate. Clypeus with the median area raised and produced rather far back between the frontal carinae, channelled down the middle, the sides of the channel forming a carina on each side, which converge behind, and in front end in two acute teeth projecting beyond the margin of the clypeus. Frontal carinae short and broad, placed fairly far apart. Eyes small. Thorax

narrower than the head, wide and convex in front, considerably narrowed behind. Pro-mesonotal suture ill defined; the meso-epinotal suture deeply impressed. Epinotum unarmed, the limits of the two faces ill defined, the declivity slightly excavated. First joint of petiole shortly pedunculated, the 1st node usually wider than the 2nd.

♀. Minor and minima. Like the ♀ maxima, but the head is more elongate, the sides less convex, especially in the smallest ♀♀. The mandibular teeth more acute.

♀. Antennae 11-jointed. Eyes fairly large and convex; three ocelli. Pronotum hardly exposed above; mesonotum not very narrow, almost as wide across the tegulae as it is long. Dorsum of epinotum very short. First node cuneiform, not much wider than the 2nd. Anterior wings with 1 cubital and 1 discoidal cell; the radial cell open.

♂. Antennae 12-jointed; the scape very short; the 1st joint of the flagellum globose. Head reversed trapeziform, widest in front. Mandibles long and narrow, with 3 or 4 teeth. Median area of clypeus more or less quadrate and gibbous. Eyes large and convex; ocelli large, raised. Pronotum not exposed above. Mesonotum very gibbous. Mayrian furrows absent. Scutellum raised above the level of the epinotum far more than in the ♀. Epinotum as in the ♀. First node emarginate above; 2nd node with the dorsal surface flattened, not convex, as in the ♀.

This genus is found in both hemispheres. One species, *S. geminata*, so far not recorded from our region, is very widely distributed, occurring over the greater part of the circumtropical area. The European species, *S. fugax*, is frequently found in the nests of other ants (chiefly *Formica*); but our commonest species, *punctaticeps*, forms large and independent nests. It is almost hypogaeic in its habits, rarely coming to the surface except in dull weather.

S. PUNCTATICEPS, Mayr. (Plate VI, figs. 78, 78a, 78b.)

Reise d. Novara, Zool., p. 109, ♀, 1865. Forel, Ann. Soc. Ent. Belg., vol. 54, p. 431, form B, ♀, ♂, 1910.

♀. Maxima, 3.6 mm. Dirty ochreous, the apical half of all the abdominal segments more or less reddish brown yellow; head brown or brownish yellow. Head sparsely and strongly punctured; thorax sparsely and less strongly punctured; the median longitudinal area of the pro-mesonotum almost impunctate. Legs and abdomen very sparsely punctured, the punctures on the abdomen minute and

piligerous. Smooth and shining. The whole body, including the legs and antennae, clothed with a rather long, erect, pale yellowish pilosity, which is somewhat denser at the margins of the abdominal segments. Pubescence not apparent. Head subquadrate, very convex above, a little wider behind than in front, as long as wide, the sides convex, the posterior angles strongly rounded, the posterior margin almost straight. Median area of clypeus bicarinate, the space between the carinae excavated, the carinae ending in front in two acute teeth, the margin between the carinae concave. A smaller but acute tooth lies outside each of the larger teeth. Mandibles sparsely and coarsely punctured, with three blunt teeth. The scape of the antenna short, extending back a little beyond the posterior third of the head, widened gradually in its apical half; 1st joint of flagellum about as long as the four following joints taken together; 2nd and 3rd joints about as long as wide; 4th-7th slightly wider than long; the 8th and 9th, forming the club, thick and five-sixths as long as the rest of the flagellum. Eyes small, placed well in front of the middle of the sides of the head. Frontal carinae longitudinally striate, slightly divergent behind. A poorly defined frontal area lies behind the prolongation of the clypeus, and is continued into a short frontal sulcus, which ends at about the level of a line joining the eyes.

Pronotum produced neck-like in front. Pro-mesonotal suture very indistinct dorsally; sides of pro-mesonotum very convex. Thorax strongly constricted at the meso-epinotal suture, the dorsal profile sloping downwards from the front to the brow of the declivity. Dorsum of epinotum widening posteriorly, passing by a low curve into the vertical declivity, the margins of which are rather prominent. First joint of petiole with a short peduncle; the node thick, squamiform, as high as wide, wider above than below; the dorsal surface not linear, convex transversely; the anterior and posterior faces subvertical; the ventral lamella produced in front (under the peduncle) into a small, broad tooth. Second node, seen from above, subglobose; a little wider than long, and about one-fifth narrower than the 1st node. The abdomen ovate, the basal margin wide, the basal angles rounded, but fairly prominent.

♂. Minor and minima, 3-1.8 mm. Entirely pale ochreous; pilosity shorter and less abundant, the puncturation scantier; head a little more elongate, with the sides less convex. Otherwise like the ♀ maxima.

♀. 6.5 mm. Head and thorax black; nodes and abdomen dark brown; legs, antennae and mandibles brownish yellow. Pilosity as in the ♀ maxima. Head a little narrower in front than behind;

almost quadrate; longitudinally striate, and also sparsely and coarsely punctured. The striae are narrow and deep. Ocelli not large; rather wide apart. Clypeus as in the ♀. Thorax a little wider than the head; sparsely but strongly punctured laterally above; the median area almost impunctate. Pronotum not exposed above; the apical half of the dorsum of the epinotum shallowly excavated, the excavation widening towards the brow of the declivity, and margined on each side by a long, oblique, rounded ridge (hardly a carina). The vertical declivity is finely and transversely striate, as are also the sides of the epinotum. The 1st node of petiole without a distinct peduncle. Seen from in front, it is an elongate triangle with the base at the dorsal surface, the latter narrowly emarginate in the middle; the posterior face of the node is subvertical. The 2nd node is globose. The abdomen and nodes are sparsely and fairly strongly punctured. Wings hyaline, nervures brown.

♂. 5 mm. Black; flagellum ochreous; tarsi and tibiae brownish yellow. Pilosity as in the ♀. Head widest in front, trapezoidal, the angles considerably rounded. Eyes large, placed in the anterior half of the head; ocelli on a slightly raised area. Anterior margin of clypeus convex; the median area raised and bearing a squarish tubercle, not carinate or dentate. Mandibles short, narrow, tridentate, the hindmost tooth very small and obtuse. Antennae 12-jointed; the scape very short, when extended laterally, only just reaching the inner margin of the eye; the 1st joint of the flagellum swollen and globose; the remaining joints much longer than wide. Head densely and finely reticulate-striate. Thorax widest across the tegulae. Pronotum not exposed above. Mesonotum as wide as long, narrow and gibbous in front. The dorsum of the epinotum is wider than in the ♀, and merges more gradually into the declivity, and is barely excavated. The whole thorax very finely reticulate-striate; the disc of the scutellum smooth, shining, and sparsely punctured. The 1st node similar to that of the ♀; but the anterior face is more quadrate and less oblique, the dorsal edge shallowly and more widely emarginate, the corners slightly raised; the posterior-dorsal face very finely and concentrically striate. The 2nd node is one-third wider than the 1st; longer than wide; its sides are parallel along their posterior two-thirds, and converge sharply inwards at the anterior third, forming a distinct but wide angle on each side. Abdomen broad, the 1st segment occupying more than half its length. Legs slender. Wings as in the ♀.

Widely distributed throughout S. Africa. Sometimes forming very large colonies containing many hundreds of workers.

The above descriptions of the ♂ and ♀ have been drawn up from specimens taken with typical ♀ *punctaticeps*, by Mr. R. Wroughton at Estcourt, Natal. They agree with those described by Forel as form B of *punctaticeps*, so that the identity of the latter as the true ♂ ♂ and ♀ ♀ of the species is thereby definitely settled. The status of form A, originally described as var. *caffra*, remains undetermined. It was taken by Mr. Wroughton in a nest of *punctaticeps*, which also contained ♀ ♀ and ♂ ♂ of the form B.

(S.A.M., R.M., G.A. colls.).

Var. CAFFRA, Forel.

Mitth. Schweiz Ent. Ges., vol. 9, p. 99, ♀, ♀, 1894. Ann. Soc. Ent. Belg., vol. 54, p. 431, form A, ♀, 1910. Mayr (S. capensis), Verh. Zool. Bot. Ges. Wien, 16, p. 905, ♂, 1866 (?).

♀. This differs from the type only in the following characters: The head is more strongly and more closely punctured in all the ♀ ♀, and the teeth on the carinae are shorter. The head of the ♀ maj. is less rectangular, being distinctly narrower in front than behind.

“♀. (?) 3·5–4 mm. Yellowish brown, with the legs, antennae and mandibles yellow. Anterior wing 5·5 mm. long (6 mm. in *punctaticeps* type), tinged with brown; nervures pale. Head quadrate, a little wider than long. Clypeus with the carinae ending in two obtuse teeth, and without distinct lateral teeth. Thorax narrower than the head. Epinotum without a trace of tubercles. Abdomen small. Puncturation fairly coarse and abundant on the head, very fine and sparse on the mesonotum. Pilosity moderate.”

Dr. Forel suggests the possibility of this ♀ being a parasitic microgyne in the nests of the type. In that case it can hardly be the ♀ of the ♀, var. *caffra*, since the description of the latter given above has been made from specimens taken by myself on Table Mountain, and found in an independent and unmixed colony.

(R.M., G.A. colls.)

Var. CYCLOPS, Santschi.

Göteborgs K. Vetensk. o. Vitterh. Handl., xv, 2, p. 19, ♀, ♂, 1914.

♀. 1·6–4·5 mm. Head a little longer than wide, distinctly narrowed in front, slightly emarginate in the middle of the posterior margin. The median area of the clypeus projecting further forwards than in *punctaticeps* i. sp., the teeth more acute. Mandibles with four distinct anterior teeth and an obtuse posterior one, the teeth more acute than in *punctaticeps*. The 2nd, 3rd, and 8th joints of the

flagellum as long as wide (a trifle wider than long in *punctaticeps*). In the largest ♀♀ the median ocellus is present, but it is very small. The thorax is a little stouter and wider across the meso-epinotal suture. The 1st node of the petiole is a little thinner above. The pilosity is less regular and less abundant than in *punctaticeps*. In the smaller ♀♀ the head is less strongly punctured than in the type of the species.

“♂. 4-5 mm. Black, hardly brownish. Legs, mandibles and scapes yellowish brown; flagellum, excepting the 1st joint, pale yellow. Wings hyaline. Pilosity as in *punctaticeps*. Shining, head dull, finely rugose, striate above. The thorax is finely striate (in *punctaticeps* the thorax is more punctured). Clypeus truncate in front. Mandibles 3-dentate. Otherwise like the type of the species.”

Natal. (Traegaardh.) Durban. (Marley and Cooper.)

The specimens collected by Messrs. Marley and Cooper are undoubtedly to be referred to this form, on account of the shape of the head and the presence of the ocelli in the large ♀♀. Nevertheless, the other differences mentioned by Santschi as distinguishing this form from the type of the species appear to me to be relative to the greater size, and not sufficient to justify sub-specific rank. The ♂ of *punctaticeps* has the thorax distinctly striate, and does not differ in that particular from the variety.

Var. *DIVERSIPILOSA*, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 15, ♀, 1901.

“♀. 2-3 mm. With more abundant and longer pilosity than in the type of the species, the hairs of medium length being intermixed with longer ones, especially on the tibiae. In the larger ♀♀ the 2nd-7th joints of the flagellum are not wider than long, as in the type of the species and the var. *caffra*, the 6th and 7th being even slightly longer than wide.”

Port Elizabeth. (Dr. Brauns.)

In view of the slight differences which may be found in the different nests of a species, it is exceedingly doubtful whether a variety should be considered valid, when founded on such slender distinctions as those enumerated in this case by Mayr.

S. *SEMILAEVIS*, Mayr.

Loc. cit., ♀.

“♀. 1.1-1.3 mm. Reddish yellow, the abdomen slightly browned. The upper surface of the head with fairly short hairs; the clypeus with

longer hairs; the dorsum of the thorax with hairs like those on the head, intermixed with a few longer ones. The abdomen has a moderately long pilosity, without pubescence; the legs and antennae with oblique hairs. Mandibles moderately shining, sparsely punctured. 5-dentate. The head smooth and shining, with piligerous punctures, which are as far apart as the length of the hairs. Cheeks finely longitudinally striate, the frontal carinae also with a few such striae. The head is distinctly longer than wide, hardly narrower in front than behind. The median area of the clypeus feebly concave transversely, margined at the sides by carinae which diverge in front and merge into the anterior margin without ending in teeth. The scape of the 10-jointed antenna does not extend back as far as the posterior margin of the head; the 2nd-7th joints of the flagellum wider than long; the 3rd-5th only half as long as wide; the 1st joint of the club but little longer than wide; the apical joint large, a little longer than the flagellum without the club. Eyes very small. Pro- and mesonotum smooth and shining, with sparse piligerous punctures; the epinotum and the sides of the mesonotum finely reticulate-punctate and more or less dull. The thorax is moderately constricted in front of the epinotum, the latter unarmed, the dorsum merging arcuately into the declivity, which is somewhat longer. The first node of the petiole is finely reticulate; the 2nd smooth and shining, transversely ovate and wider than the 1st. Abdomen smooth and shining, with very sparse piligerous punctures."

Port Elizabeth. (Dr. Brauns.)

TRIBE PHEIDOLOGETINI, Emery.

Three genera of this tribe are found in our region. The ♂♂ and ♀♀ are usually enormously larger than their ♂♂. A ♀ caste occurs in some genera; the ♀♀ of the genus *Aneleus*, Em., have very large and parallel-sided heads.

GENUS CAREBARA, Westwood.

Ann. Mag. Nat. Hist., vol. 6, p. 86, 1841.

Characters.

♂. Antennae 9-jointed, the club 2-jointed and very distinct. Eyes and ocelli entirely absent. Frontal carinae very short. Thorax unarmed; pro-mesonotal suture obsolete. First joint of the petiole with a short peduncle; both nodes transverse, subovate.

♀. Antennae 10-jointed, without a distinct club. Eyes and ocelli

large. Head triangular. Frontal carinae very short. Clypeus with a wide, convex, and raised median area. Thorax robust, much wider than the head, and very convex; pronotum not exposed above, lying entirely beneath the mesonotum; the latter with well-defined parapsidal sutures, Mayrian furrows absent. Scutellum high, much above the level of the metanotum. Epinotum unarmed. First node of petiole more or less cuneiform; 2nd node transverse, flattened above. Abdomen very large. All the tarsi densely clothed with stiff bristly hairs. Wings long; anterior wing very pointed, 1 cubital and 1 discoidal cell, the radial cell closed.

♂. Antennae 13-jointed, the scape short. Also much larger than the ♀, and not very much smaller than the ♀, which it resembles in general features. The nodes of the petiole are not so high as in the ♀, and the 1st node is thicker above.

C. VIDUA, Smith. (Plate VI, figs. 79, 80.)

Cat. Hymen. B.M., vol. 6, p. 179, ♀, ♂, 1858. Forel, Ann. Soc. Ent. Belg., vol. 45, p. 392, ♀, 1901. Santschi, Boll. Lab. Zool. Sc. Agri. Portici, vol. 8, p. 363, 1914.

♀. 1.6-2 mm. Pale ochreous yellow; inner margin and teeth of the mandibles brown. Smooth and shining. Head, pro-mesonotum and nodes with a sparse and rather coarse puncturation; epinotum and abdomen very shallowly and sparsely punctured. Pilosity short, scanty and yellowish, longest on the thorax, most abundant on the legs. Legs and antennae also with pubescent hairs. Head rectangular, hardly longer than wide, the sides feebly convex, the posterior angles rounded, the occipital margin shallowly concave; about as wide in front as behind, but occasionally some individuals from the same nest have the head a little narrower in front than behind. Mandibles smooth and shining, quadridentate; the two anterior teeth large and sharp, the two posterior smaller and less acute, and separated from the anterior pair by a short space; occasionally the hindmost tooth is obsolete. Clypeus produced, truncate in front, the median area raised and convex, the anterior margin straight. Eyes entirely wanting. Antennae 9-jointed; the scape short, hardly extending back as far as the posterior third of the head; 1st joint of the flagellum quite twice as long as wide, nearly as long as the five following joints taken together, the latter all very short and much wider than long. The last two joints of the flagellum form the club, the last joint being three times as long as the preceding. Thorax fairly flat above. Pro-mesonotal suture absent, meso-epinotal distinct.

The thorax is fairly strongly constricted laterally at the meso-epinotal suture. Pro-mesonotum about one-third longer than wide, the sides convex. Dorsum of the epinotum shorter than the oblique declivity, into which it merges by a gentle curve; sides of the declivity distinctly margined, the raised margins extending indistinctly almost to the base of the dorsum. First joint of petiole very shortly pedunculate, the node wider than long, ovate, convex above. Second node as wide, or nearly as wide, as the 1st, of similar shape, but a trifle longer. Abdomen ovate, all the segment wider than long.

♀. 24 mm. Length of anterior wing, 23.5 mm. Head, thorax and petiole black; abdomen varying from dark red to reddish brown. Mandibles and legs dark brown; tarsi and antennae reddish brown. Thorax shining, the rest of the body nitidulous. Head, thorax and nodes with a sparse, yellowish and adpressed pubescence (coarse and almost pilose); abdomen sparsely and finely pubescent. Clypeus with a few fairly long pilose hairs. Antennae densely pubescent. Tibiae and tarsi densely clothed with long and almost bristly hairs, which form dense tufts at the apical margins of the tibia and of the first four tarsal joints. Head closely and very coarsely punctured, each puncture with a piligerous prominence in its centre; the space between the punctures rugose. Mandibles longitudinally striate and strongly punctured between the striae. Mesonotum and petiole sparsely punctured, the punctures similar to those on the head, but smaller and shallower. Sides of thorax closely striate and more or less punctured. Epinotum dull, very closely and minutely punctured, the sides with a few strong striae; the dorsum with a few large and deep punctures; the declivity with its upper margin more or less rugoso-striate. Abdomen microscopically alutaceous, and also sparsely punctured, the punctures strong, but not so large or deep as those of the mesonotum. Head, including the mandibles, triangular, much wider behind than in front, the posterior angles widely rounded. Clypeus short, the median area raised, convex transversely, truncate or deeply impressed in front, and with a small tubercle behind the middle of the anterior margin. Frontal carinae short. Mandibles quadridentate; the teeth somewhat obtuse. Antennae 10-jointed, the scape extending back as far as the posterior ocelli; the 1st joint of the flagellum a little longer than wide, the 2nd-6th joints wider than long. Eyes fairly large, oblique and ovate. Ocelli not large. Thorax much wider and higher than the head. Only the shoulders of the pronotum are visible from above; mesonotum very high and convex in front, hiding the pronotum; parapsidal sutures distinct. The scutellum semicircular, somewhat pointed posteriorly, and sepa-

rated from the mesonotum by a deep and broad sulcus; metanotum prominent and very convex. Dorsum of epinotum very short in the middle, longer at the sides, the declivity vertical. with raised and sharply defined lateral margins, which are distinctly curved inwards. First node of the petiole, seen from the side, subtriangular, the anterior face slanting obliquely forwards; the dorsal edge is thickest at the sides, truncate behind. The 2nd node transverse, rectangular, almost twice as wide as long, the dorsal surface inclined forwards, convex transversely. Abdomen very large, somewhat flattened above, very little narrowed at the base or apex, the sides almost parallel, the apex widely rounded, as long as the thorax and petiole together, all the segments much wider than long, the first three a little more than twice as wide as long. Wings very long, the anterior subacute at the apex, brownish, the nervures dark brown.

♂. 17-18 mm. Length of anterior wing, 16 mm. Dull; head, thorax and 1st joint of petiole brownish black; the dorsal surface of the 2nd node more or less dark yellow; mandibles, antennae, legs and abdomen dark ochreous. Head, mesonotum and scutellum fairly strongly and very closely punctured; the dorsum of the epinotum transversely and also somewhat obliquely striate; the declivity finely reticulate-punctate and also transversely striate. Petiole finely and closely punctured. Abdomen finely coriaceous. Femora and tibiae finely and closely punctured, slightly shining. Head, mandibles, thorax and petiole densely clothed with a short, suberect, yellowish brown pilosity, the hairs slightly curved. The abdomen has a fine but very dense decumbent pubescence, intermixed with some longer pilose hairs. Legs and antennae with a very fine and dense pubescence, the pilosity on the legs less abundant and less coarse than in the ♀, not forming dense tufts at the apices of the joints. Head subtriangular, the width between the eyes two and a half times as long as the distance from the anterior margin of the eye to the posterior border of the head. Clypeus produced in the middle, very prominent and convex, rounded in front, with a transverse impression behind. Mandibles convex lengthwise, quadridentate, the apical tooth very large and acute. Antennae 13-jointed; the scape short, one quarter longer than wide; the 1st joint of the filiform flagellum very small, hardly more than one-quarter the length of the scape; all the remaining joints much longer than wide, the 3rd-11th joints widest in the middle. Eyes very convex, occupying more than half the sides of the head; ocelli slightly raised. Thorax similar to that of the ♀, but not so massive; the mesonotum less gibbous anteriorly; the brow of the epinotum rounded. The 1st node is flatter than in the ♀, the posterior-

dorsal face less raised and more rounded; the 2nd node is almost half as wide again as the 1st, flatter than in the ♀, its posterior-dorsal margin strongly convex. Abdomen subovate, narrowing towards the apex. Wings as in the ♀.

S. Rhodesia; Natal; common over the greater part of the Ethiopian region. (S.A.M., R.M., G.A. colls.)

The ♂♂ and ♀♀ of this species are occasionally very plentiful after rains, but the minute ♂♂ are rarely seen. The first specimens of the latter were found, together with the ♀, by Haviland in Natal, in the nest of a termite. Some specimens in my collection were taken by Mr. Zealley at Hartley, S. Rhodesia, and were issuing from holes in the ground with the winged sexes, far removed from any termite mound. Others were taken by myself under similar conditions at the Victoria Falls. Since on the latter occasion different ♀♀, with the coloration of the abdomen varying from red to dark brown, were emerging from the same hole, it would seem that the distinction of the race *abdominalis*, Santschi (Bull. Soc. Ent. France, p. 285, 1912), based only on the colour of the abdomen, can no longer be maintained.

It is probable that the dense tufts of hairs on the tarsi of the ♀ serve an important purpose—that of enabling some of the minute ♂♂ to attach themselves to the body of the ♀ when the latter is about to leave the parental nest. Several specimens of the ♀ have been taken by me with one or more ♂♂ biting on to the tarsal fimbriae. I am inclined to suspect that the young queen cannot start a new nest without the help of one or more of the ♂♂ from the old nest, on account of the size of her mouth-parts, which would probably be too large and clumsy to tend the tiny larvae of her first brood, and that it is therefore essential that she should have with her some ♂♂ which are able to feed the larvae by conveying to them the nourishment taken from the mouth of the queen.

Race JUNODI, Forel.

Ann. Soc. Ent. Belg., vol. 48, p. 154, ♀, 1904. Rev. Zool. Afric., vol. 2, p. 336, ♂, 1913.

“♂. 1.7–1.9 mm. Differs from *vidua* s. str. by having the esopinotal suture distinctly constricted and by the mandibles, which have three distinct teeth in front and a small, obtuse, and indistinct tooth behind. The size is also somewhat greater. Otherwise identical with *vidua*.”

“♀. 23 mm. Very similar to *vidua* type, but the thorax and abdomen narrower and more elongated in proportion. The head is

more triangular, wider behind and narrower in front. Frontal sulcus much deeper. The clypeus, which is more strongly and abruptly truncate in front, has its upper surface strongly truncate and widely emarginate, which is not the case in *vidua*. The frontal carinae short, wide, and forming a marked lateral ridge, which is much more divergent than in the type, where it is hardly apparent. The dorsum of the epinotum is almost obsolete in the middle. The posterior metatarsi very little shorter than the tibiae (much shorter in the type). Puncturation stronger, the punctures closer together and larger than in *vidua*, especially on the thorax and abdomen. The mesonotum has some diffuse but distinct rugae between the punctures. Pilosity and pubescence a little less abundant than in the type. Dull rusty red, slightly brownish. Abdomen, petiole, metanotum, three longitudinal bands on the mesonotum and some vague spots on the sides of the thorax and epinotum, dark brown. Deälated."

Shiluvane. (H. Junod.)

C. ARNOLDI, Forel.

(Oligomyrmex) Ann. Soc. Ent. Belg., vol. 57, p. 123, ♀, 1913.

Santschi, Boll. Lab. Zool. Scu. Agric. Portici, vol. 8, p. 363, 1914.

♀. 1.7-1.9 mm. Pale ochreous yellow; the teeth of the mandibles brownish. Smooth and shining. Head and anterior half of the promesonotum finely and sparsely punctured, the punctures regularly spaced and distinct. Pubescence yellowish and long; not very dense on the head and thorax; more abundant and much longer on the abdomen. Mandibles with three distinct and acute teeth, and sometimes with a trace of a fourth tooth posteriorly. The dorsal profile of the thorax slopes in a continuous and slightly convex line, broken only at the meso-epinotal suture, from front to back. This, and the slightly longer pubescence and pilosity, are the only differences which I am able to see between this species and the ♀ ♀ of *vidua*, (from Hartley S. R.), described in the preceding pages. Since the latter were taken with the ♀ ♀ and ♂ ♂, which are typical *vidua*, Smith, I believe that there can be no doubt as to the correctness of the identification. In those specimens the dorsal profile of the thorax is inclined backwards as far as the meso-epinotal suture, beyond which it rises along the dorsum of the epinotum, the latter shorter than the declivity. On the other hand, the ♀ ♀ from the Victoria Falls, also taken with typical ♀ ♀ and ♂ ♂ of *vidua*, have the declivity as long as, or a little longer than, the dorsum, therein agreeing with Santschi's description of *vidua*. The dentition on which that author bases the

differences between *vidua*, *junodi*, *arnoldi*, and *silvestri* is too variable, even in examples taken from the same nest, to be considered reliable. I am therefore inclined to believe that *arnoldi* is only a variety of *vidua*; but in the absence of the ♀ ♀ and ♂ ♂ of the former, the question cannot be definitely decided.

Bulawayo. Found under the soil in small numbers on a single occasion. (S.A.M., R.M., G.A. colls.)

GENUS ANELEUS, Emery.

Term. Füzetek, vol. 23, 1900. (*Pheidologeton*, Mayr, pars.)

*Characters.**

♂. Antennae 11-jointed. Head very large, elongate, longer than wide, more or less abruptly truncate behind. Mandibles triangular, with 5 or more distinct but blunt teeth. Eyes very small or absent.

♀. Antennae 11-jointed; the club distinct and composed of the last two joints. Eyes very small. Mandibles elongate triangular, with 5 or more acute teeth. Clypeus usually more or less distinctly bicarinate. Pro-mesonotal suture absent; meso-epinotal suture distinct. Epinotum bidentate or unarmed. Tibiae and femora more or less swollen in the apical half.

A. PERPUSILLUM, Emery.

(*Pheidologeton*) Ann. Soc. Ent. France, vol. 63, p. 26, ♂, 1895.

“ ♂. 2-2.5 mm. Reddish yellow, head rufous, shining, very smooth, with sparse piligerous punctures; meso- and metapleura closely punctured and dull. Head elongate, sub-parallel, widely emarginate behind, and with a transverse crest or thin carina, interrupted in the middle, in front of the occipital margin. Cheeks and front of the head striate; frontal carinae short. Clypeus flat or nearly so; widely emarginate in front. Eyes very small. Mandibles sparsely punctured, shining, striate at the base outwardly, quinque-dentate. Antennae short, the scape hardly exceeding half the length of the head. Thorax with the meso-epinotal suture deeply impressed, the pro-mesonotal suture obsolete, pro-mesonotal disc convex, scutiform, obtusely marginate in front, narrow behind. Epinotum armed with an acute tooth on each side. First node of petiole small, squami-

* These characters are based on the species described below and *politus*, *diabolus* and *silvestrii* Santschi. I have not been able to see a copy of Emery's paper. *Pheidologeton hostilis*, Smith, is unknown to me, but owing to its 12-jointed antennae cannot belong to this genus.

form; the 2nd node larger, transversely ovate, subangulate on each side."

"♀. 1.5 mm. Reddish yellow. Head elongate, the sides moderately convex, the occipital margin concave and sharp. Pro-mesonotum marginate in front, the anterior angles acute. Epinotum armed with a triangular tooth on each side. Petiole narrow; 2nd node hardly wider than the 1st; the 1st abdominal segment truncate in front. Sculpture as in the ♂."

Pretoria, Kimberley. (Simon.)

Race ARNOLDI, Forel. (Plate VI, figs. 81, 81a.)

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 242, ♀, 1914.

♂ (hitherto undescribed). 2.8–3.1 mm. Head parallel-sided, varying from one-seventh to one-fourth wider than long. Eyes entirely absent, or composed of four or five ill-defined facets. Mandibles not striate at the base. Otherwise exactly like the type.

♀. 1.1–1.4 mm. Epinotum, excepting the declivity, and sides of the mesonotum reticulate and somewhat dull, the rest of the body entirely smooth and shining. Erect pilosity very scanty, absent from the legs and antennae, which have a feeble pubescence, wanting elsewhere. Eyes composed of a single facet. First joint of flagellum a little more than twice as long as wide, about as long as the five succeeding joints taken together; 2nd–8th joints much wider than long; the club not quite twice as long as the rest of the flagellum. Mandibles quadridentate, smooth and shining, very sparsely and very feebly punctured. The anterior angles of the pro-mesonotum sharply defined, subdentate. Declivity of epinotum concave from above to below, smooth and shining; very distinctly margined at the sides, the margin continued up to the epinotal teeth, and slightly beyond them along the sides of the dorsum; the dorsum longer than the declivity, and one-third longer than wide.

"Median area of clypeus subtruncate in front, which is not the case in the type, . . . ; peduncle of the 1st joint of petiole short, shorter than in the type" (Forel).

Two out of the three ♂♂ which I have before me were taken on the same occasion. Both lack eyes. In one the head is one-fifth longer than wide; in the other one-quarter longer than wide. The remaining ♂ has the head a little less than one-seventh longer than wide; but the eyes are distinct, though small. The ♀♀ of the two series do not differ in the least, so that there is no reason to suppose that the ♂♂ do not all belong to the same species.

Bulawayo. Two ♀♀ and about three dozen ♂♂ were taken in a rotten beech-nut in the ground. On another occasion one ♀ and half a dozen ♂♂ were found in a decaying grain of maize. Also taken running under a stone. I have also received specimens from Durban (Marley and Cooper), which do not differ from this race except in the carinae on the clypeus being a little more distinct and a little closer together posteriorly.

(S.A.M., R.M., G.A. colls.)

GENUS AEROMYRMA, Forel.

Grandidier's Hist. Madagascar, 20, p. 198, 1891.

Characters

Strongly dimorphic.

♀. Antennae 10-jointed; club 2-jointed. Head much longer than wide; sometimes with a small tooth on each side above. Mandibles with about 6 teeth. Eyes small; composed of a single facet. Thoracic sutures distinct. Epinotum dentate or unarmed. Abdomen long, longer than the rest of the body.

♂. Head not much longer than wide. Abdomen of the usual shape; not longer than the rest of the body. Otherwise like the ♀. This genus contains three species, one of which is found in Madagascar.

A. AFRICANA, Forel.

Schultze's Reise Südafrika, vol. 4, p. 15, ♀, 1910.

"♀. 2.7-2.9 mm. Mandibles smooth and shining, with about 6 teeth. Clypeus very short, arched, without emargination, not truncate, with only a small impression in front in the middle, hardly produced backwards between the frontal carinae. Frontal area triangular; frontal carinae very short, hardly divergent, not far apart, without lobes. Head large, rectangular, quite one-quarter longer than wide, the sides hardly convex in front and behind, with a small tooth or horn at about the outer fourth of the width of the head, like that of *Oligomyrmex corniger*, Forel, but somewhat smaller. The margin of the head behind, between the two teeth, is concave. The exceedingly small eye is composed of a single facet, and is placed within the anterior third of the head. The scape of the 10-jointed antenna hardly extends beyond the middle of the head. Last joint of flagellum quite three times as long as the preceding joint. The pronotum is strongly convex, and steep in front. . . . Thorax with both sutures distinct, but not in the least constricted, short and wide. Epinotum

without a trace of teeth, only excavated lengthwise, with two elongate and obtuse swellings. Both nodes rounded, wider than long, the 1st pedunculate, the 2nd nearly twice as wide as the 1st, which is narrow. Abdomen very long, longer than the rest of the body, with a honey-yellow translucency. Legs short. Head glossy, finely reticulate. The rest of the body smooth, shining and with piligerous punctures. Erect hairs very fine, pointed, short and scanty, absent from the legs. Pubescence oblique, somewhat woolly, more abundant than the pilosity and present all over, without, however, being at all dense. Dirty yellow; head yellowish red; abdomen pale translucent yellow; legs and antennae yellow."

Kooa-Sekgoma, Kalahari. (L. Schultze.)

A. TRAEGAORDHI, Santschi.

Göteborgs K. Vetensk. och Vitterh. Handl., xv, 2, p. 20, ♀, 1914.

"♀ minor. 1.5 mm. Yellow, slightly reddish. Mandibles, clypeus, antennae, tarsi and abdomen yellow. Smooth and shining. Epinotum, posterior half of mesonotum and the 1st node reticulate, punctate and nearly dull. The smooth areas with a fine and sparse piligerous puncturation. Pubescence fairly exerted and distributed all over the body and the limbs. A few rare erect pilose hairs. Head longer than wide, the sides moderately convex, the hind margin feebly concave. Eyes composed of a single facet, placed a little in front of the middle of the sides. Mandibles with five teeth. Pronotum marginate in front. Meso:epinotal suture deep. Dorsum of epinotum a little convex, wider than long, hardly marginate. The declivity longer, marginate. The junction of the two planes of the epinotum angular, with a very small tubercle, often indistinct, and not dentate as in *nosidambo*, Forel. First node short, thick at the summit, as high as the length of the joint, with a very small tooth below in front. Second joint globose, wider than the 1st."

Balgowan and Stamford Hill, Natal. (Traegaordh.)

TRIBE LEPTOTHORACINI, Emery.

GENUS LEPTOTHORAX, Mayr.

Verh. Zool. Bot. Ver. Wien, vol. 5, p. 431, 1855.

Characters.

♀. Antennae 11 or 12-jointed (12-jointed in our three species), with a distinct club formed of the three apical joints. Mandibles with four or five teeth. Clypeus fairly large. Epinotum armed with

a pair of teeth or spines. First joint of petiole with a short peduncle, the ventral lamella sometimes bearing a small tooth. Hairs usually clavate.

♀. Not much larger than the ♂. Wings with one cubital and one discoidal cell. Otherwise like the ♂, except for the usual sexual differences.

♂. Antennae 12 or 13-jointed. Mandibles narrow, the masticatory margin truncate. Clypeus arched, convex. Mayrian furrows present. Petiole and wings as in the ♀; abdomen narrower.

The species of this genus are rather timid and slow ants, forming small communities in hollow stems or under bark. Certain species of the genus in N. America and Europe house in their nests other parasitic ants which are closely allied generically to themselves (*Harpagoxenus*, etc.). These have ergatoid queens, whose progeny is reared by the workers of the host.

Key to the ♂ ♀ of Leptothorax.

- (4). 1. Shoulders of the pronotum sharply angulated; dorsal profile of thorax straight and horizontal, or nearly so.
- (3). 2. 1st node of petiole a little wider than long, convex above; 2nd node twice as wide as long. *latinodis*, Mayr.
- (2). 3. 1st node of petiole as wide as long, flat above; 2nd node of petiole one and a half times as wide as long. *angulatus*, Mayr.
- (1). 4. Shoulders of the pronotum not sharply angulated; thorax depressed in front of the epinotum, not straight in profile. *denticulatus*, Mayr.

L. ANGULATUS, Mayr. (Plate V, figs. 56, 56a.)

Verh. Zool. Bot. Ges. Wien, vol. 12; p. 739, ♀, 1862.

♀. 3.2 mm. Reddish ochreous, club of antennae and lateral dorsal margins of the thorax and petiole brownish. Head reticulate-rugose, coarsely so at the sides in front of the eyes, the space between the rugosities finely reticulate, and some of the rugae emphasised longitudinally. Upper surface of thorax and of both joints of the petiole strongly reticulate-rugose; sides of meso- and metathorax finely reticulate. Abdomen and legs microscopically rugulose, smooth and shining. Legs and antennae with a very short and fine pubescence, absent from the rest of the body, which has a sparse pilosity consisting of short, thick, erect and clavate hairs. Head, excluding the mandibles, a little longer than wide, a little wider behind than in front, the sides feebly convex, the posterior angles very sharp, the posterior margin straight. Clypeus raised in the middle and prolonged back between the frontal carinae, with a well-defined median carina and a finer lateral carina on each side. Frontal area indistinct. The frontal carinae are rather wide apart, divergent posteriorly.

Mandibles finely striate, armed with five teeth, the apical tooth acute. The scape extends back as far as the occipital margin; 1st joint of flagellum nearly as long as the 2nd-4th taken together; 2nd-8th joints wider than long. Eyes not large, situated a little in front of the middle of the sides. Thoracic sutures obsolete. Thorax widest anteriorly, the shoulders sharply defined, subangular. The epinotum is armed with a tooth on each side, which is directed upwards and slightly outwards, and is not longer than it is broad at the base; the declivity is almost vertical. The dorsum of the thorax is widened and subdentate at the lateral margins, above the posterior stigmatic orifices. The 1st joint of the petiole has a short peduncle; the node is as wide as long, moderately convex above, and, seen from above, more or less hexagonal in outline; the anterior face of the node slopes forwards; the ventral lamella at the base has a small downwardly directed spine. The 2nd joint of the petiole is subquadrangular, one and a half times wider than long, nearly one and a half times as wide as the 1st. Abdomen oval. All the femora swollen in the middle; middle and hind tibiae without calcaria.

Khami R. and Matopo Hills, S. Rhodesia.

I have met with this species only on the trunks of trees, previously mentioned as being the habitat of *Monomorium arnoldi*. (S.A.M., R.M., G.A. colls.)

L. LATINODIS, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 10, p. 130, ♀, 1895.

“♀. 3.2 mm. Reddish yellow, last joint of flagellum brownish, mandibles pale yellow with dark brown teeth. The clavate hairs are moderately sparse; the fine pubescence of the abdomen very sparse. Mandibles longitudinally striate, quadridentate. Head rectangular, longer than wide, with rounded corners, narrower in front than behind; longitudinally striate; the middle of the vertex less coarsely striate and somewhat coriaceous and feebly shining; the outer thirds of the head more reticulate-rugose, and round the eyes clearly punctulate. The disc of the clypeus is flattened (more so than in *angulatus*), and has a median carina and two lateral carinae, which separate it from the lateral portions of the clypeus; the median carina is not continued back on to the posterior portion of the clypeus, which lies at a different level to the rest of the clypeus. . . . The scape does not extend back as far as the posterior margin of the head; the 2nd-8th joints of the flagellum wider than long; and the joints which form the club, especially the last two, are only feebly constricted off from each

other. The eyes are placed a little in front of the middle of the sides. The thorax is moderately finely reticulate, finely reticulate-punctate in the interspaces, and shows no constrictions or sutures above. The pronotal angles are produced into distinct triangular teeth (in *angulatus* less pronounced and much smaller); the pronotum is wider than the rest of the thorax, but a little narrower than the head. . . . The epinotum has two short small spines, which are only a little longer than their basal width. The sculpture of the petiole similar to that of the thorax; the 1st joint shortly pedunculate, the node a little wider than long, and, seen in profile, moderately convex above lengthwise; the 2nd node is quite twice as wide as long (in *angulatus* hardly one and a half times as wide as long), and wider than the 1st. Abdomen shining and very finely rugulose. The legs and antennae without erect hairs. The femora are swollen, much the same as in *angulatus*. Like other species of the genus, the middle and hind tibiae are without calcaria."

Delagoa Bay. (Dr. Brauns.)

L. DENTICULATUS, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 5, ♀, 1901.

"♀. 3-3.1 mm. Yellow or reddish yellow, the legs a little paler, the teeth of the mandibles brown. The upper surface of the body is clothed with short and very feebly clavate hairs; the fine, decumbent, and very short pubescence is very scanty, especially on the abdomen; the outer margins of the tibiae with decumbent hairs. Mandibles 5-dentate, longitudinally striate, and sparsely punctured. The head is fairly rectangular, a little longer than wide, with round corners, narrower in front than behind. It is rather coarsely and longitudinally rugose, partly coarsely reticulate, between the rugae finely reticulate-punctate; the vertex and occiput with fairly straight longitudinal striae. Clypeus rugose, distinctly produced in front, the anterior margin arcuate, fairly flat and tricarinate, the median carina becoming indistinct behind, the lateral carinae less pronounced than the median, and not reaching the anterior margin. The clypeus is wider posteriorly than in either *angulatus* or *latinodis*. The scape of the 12-jointed antenna does not extend back as far as the hind margin of the head; the 2nd-8th joints of the flagellum about twice as wide as long, the joints of the club fairly clearly separated, the first being about as wide as long. The sides of the head show faint traces of an antennal scrobe. The eyes lie a little in front of the middle of the sides. Thorax rather coarsely and longitudinally striate, partly longitudinally rugose, finely reticulate-punctate between the rugae, widest

anteriorly, rounded at the sides of the pronotum. The margin of the thorax between its sides and upper surface is bisinuate, shallowly so at the pro-mesonotal suture, more deeply at the meso-epinotal, the latter being distinctly impressed; the dorsum of the epinotum is feebly convex, a little longer than wide, with two blunt spines behind, which are about half as long as the dorsum, and directed backwards, outwards and upwards. The 1st joint of the petiole has a short peduncle, and is closely reticulate-punctate and also coarsely rugose; its node has a quadrangular dorsal surface, which is feebly convex transversely and lengthwise, and distinctly wider than long, the anterior corners strongly rounded. The dorsal surface is delimited from the anterior face by a nearly rectangular margin; the anterior face is vertical above, sloping forwards below; the posterior face of the node is very short and vertical, and merges gradually into the upper surface. On each side of the node, a little below the hind angles, there is a small pointed tooth with a hair or bristle at its apex, and there are one or two similar but smaller projections in front of these on the dorsal lateral margins of the node. The 2nd node of the petiole is about one and a half times as wide as long, somewhat wider than the 1st, and has traces of two small teeth or tubercles like those of the 1st node on each of its rounded sides. The abdomen is shining, very shallowly rugulose, and with some scattered piligerous punctures, almost smooth.

♂. 3.5 mm. Reddish yellow; mesonotum and scutellum brownish; the abdomen, excepting the front half of the 1st segment, light brown. Pubescence and sculpture as in the ♀. The mandibles more coarsely and more abundantly punctured; mesonotum and scutellum longitudinally rugoso-striate, finely reticulate-punctate between the striae; the declivity of the epinotum only reticulate-punctate. Head as in the ♀. The epinotal teeth triangular and blunt, which are not, or only slightly, longer than wide at the base. Petiole and abdomen as in the ♀. One dealated ♀. In hollow stems."

Port Elizabeth. (Dr. Brauns.)

TRIBE MYRMICARIINI, Forel.

GENUS MYRMICARIA, Saunders.

Trans. Ent. Soc. London, iii, p. 57, 1841.

Characters.

♂. Antennae 7-jointed, the scape cylindrical; all the joints of the flagellum, except the 1st, much longer than wide; no distinct club.

Clypeus broad, convex in the middle. Frontal area not clearly defined posteriorly. Frontal carinae wide apart, fairly short. Eyes prominent and convex. Pro-mesonotal suture feeble or obsolete; meso-epinotal suture deep; the thorax more or less constricted or excised laterally at the suture. Ventral anterior angles of the pronotum produced into distinct spines or teeth. Scutellar portion of mesonotum with an elongate tubercle or carina on each side. The epinotum armed with two long and acute spines; sometimes also with the base expanded or lobate on each side. First joint of petiole with a long peduncle, distinctly delimited from the node. Both nodes usually more or less conical, the 1st often compressed laterally at the summit. Abdomen subglobose; somewhat truncate at the base. Legs long and slender.

♀. Antennae 7-jointed. Ocelli small. Thorax very gibbous and convex in front. Pronotum very slightly exposed above at the sides only. The level of the dorsum of the mesonotum and scutellum much higher than that of the epinotum. Mesonotum and epinotum simple, without lateral carinae or lobes. The dorsum of the epinotum short, much shorter than the declivity; epinotal spines much shorter and broader than in the ♂. Petiole as in the ♂. Abdomen subovate, longer than wide, truncate at the base. Wings with 1 cubital and 1 discoidal cell; radial cell open.

♂. Antennae 13-jointed, filiform. The scape short, usually about as long as the 2nd joint of the flagellum; 1st joint very short, all the remaining joints much longer than wide. Head transverse. Eyes large. Ocelli fairly large, slightly raised. Frontal carinae moderately distinct and short. Clypeus convex. Mandibles small and edentate. Dorsum of epinotum bituberculate at the apex. Petiole very long, the 1st joint with the peduncle shorter and broader than in the ♀, both nodes flatter and elongate, not conical. Abdomen broad, cordate, hardly longer than wide, convex above, concave below. Legs long and slender. Wings as in the ♀.

Distribution: Ethiopian and Indo-Malayan regions.

Key to the ♂ ♀ of Myrmicaria.

- (8). 1. Larger species, 5 mm. or more; sculpture coarse, head striated all over.
- (3). 2. Head distinctly emarginate behind. *Baumi*, Forel.
- (2). 3. Head straight or convex behind.
- (7). 4. Tibiae and scapes longitudinally striate; larger species, 6·5 mm. or more.
- (6). 5. Sculpture strong; head reticulate (with transverse as well as longitudinal striae); 1st node as high as the 2nd, pointed above, conical.

eumenoides, Gerst.

- (5). 6. Sculpture less strong; head with only longitudinal striae; 1st node higher than the 2nd, not conical, slightly flattened above.
striata, Stitz.
- (4). 7. Tibiae and scapes smooth; smaller species, less than 6 mm.
nigra, Mayr.
- (1). 8. Smaller species, less than 5 mm.; sculpture feebler and much more sparse; head striated only on the cheeks.
- (10). 9. Dark black, pilosity also black; scape extending beyond the occipital margin by almost one-third of its length; mesonotum with high posterior lateral carinae. *nigerrima*, Arnold.
- (9). 10. Brownish, pilosity yellowish; scape extending beyond the occipital margin by one-quarter to one-fifth of its length; mesonotum with feeble and low lateral carinae behind. *laevior*, Forel.

M. EUMENOIDES, Gerstaecker. (Plate VII, figs. 87, 87*a*, 88, 89*a*, *b*.) (Heptacondylus), Monatsb. Ak. Wiss. Berlin, p. 263, ♀, 1858.
(*H. sulcatus*), Mayr, Verh. Zool. Bot. Ges. Wien, vol. 12, p. 756, ♂, 1862.

♀. 6.5-7.7 mm. Head, thorax and petiole dark red, somewhat brownish red, the nodes a little darker. Abdomen, legs and antennae dark brown, the base of the abdomen a little paler. Shining, especially the dorsum of the epinotum; the basal fourth of the 1st abdominal segment very finely and closely punctured and subopaque. Head, pro-mesonotum and dorsum of epinotum with a few strong, more or less longitudinal rugae, connected by transverse anastomoses (almost reticulate round the eyes). Sides of thorax faintly and longitudinally striate; the spaces between all the striae or rugae smooth and shining. Nodes of petiole with a few feeble striae. The abdomen smooth and shining. Femora very shallowly and sparsely punctured. Scapes and tibiae longitudinally striate on the upper surface. Mandibles closely and longitudinally striate. Whole body, including legs and antennae, with a strong but rather sparse pilosity, consisting of stout, more or less erect, blackish hairs. The flagellum has in addition a sparse, decumbent pubescence, which is absent elsewhere.

Head subcircular, a little wider behind than in front, about as long as wide, the posterior margin straight, the angles rounded. Clypeus broad, the anterior margin convex. The median area has about 7 or 8 longitudinal raised lines (hardly carinae); the posterior margin, between the frontal carinae, broad; frontal area indistinctly defined. Frontal carinae parallel, widened and sublobate in front, extending back nearly to the level of the anterior margin of the eyes. The latter convex and prominent, placed behind the middle of the sides of the head. Mandibles with 5 teeth, the two anterior ones large and acute.

Scape of antenna fairly long, extending back well beyond the occipital margin; all the joints of the flagellum much longer than wide, the 2nd and apical joints longest. Pro-mesonotal suture faintly indicated. Pronotum with strong transverse and oblique rugae, those on the margins of the dorsum very distinct; the ventral anterior angles produced into strong teeth. The mesonotum is raised posteriorly, and has a very steep posterior face, the sides of which are sharply margined and slightly expanded, or ear-shaped. The dorsum of the epinotum is distinctly margined (the rugae which form the margins being continued along the outer sides of the spines), and is sublobate on each side at the base, narrowed towards the apex. The spines are acute, as long as the dorsum, slightly divergent apically, directed slightly upwards. The declivity of the epinotum is very steep; as long as, or a little longer than, the dorsum; distinctly margined laterally, the margins being continued along the lower sides of the spines. Peduncle of the 1st joint of the petiole flattened, one-quarter longer than the node; the latter more or less conical, as long as wide, somewhat compressed laterally at the summit, the anterior face vertical and feebly convex from above to below, the posterior face longer than the anterior, and sloping downwards. The 2nd node about one-quarter longer than wide; widest at its posterior third. Seen from above, the outline is subovate; seen from the side, the anterior face is convex, and slopes in a sharp curve forwards; the posterior face is shorter than the anterior, and vertical. The base of the abdomen straight, with prominent but rounded lateral angles. The 1st segment is about as wide as long, and much wider and longer than the remaining segments taken together, which are hardly visible from above.

♀. 14 mm. Pilosity and colour as in the ♂, but the colour is a little darker, the sides of the mesonotum behind, and the middle portion in front, dark brown. The hairs on the legs are more oblique than in the ♂. The sculpture is very similar to that of the ♂, but is stronger on the head, the region behind the eyes very coarsely reticulate, the space between the reticulations almost dull. Mesonotum and scutellum strongly and fairly closely longitudinally striate, the pronotum with a few longitudinal and feeble striae. The epinotum is very coarsely and longitudinally rugose on the dorsum, striate on the sides, the median area of the declivity smooth. A narrow median area on the anterior third of the mesonotum is without striae. A broad transverse band on the apical margins of all the abdominal segments subopaque and microscopically rugulose. The dorsum of the mesonotum and scutellum is raised high above the level of the head and epinotum. The mesonotum is very convex in front, lengthwise and

transversely, and as long as wide. The scutellum is nearly one and a half times wider than long, a little more than one-third the length of the mesonotum, and is a little higher than the latter. Dorsum of epinotum very short—much shorter than the declivity, which is vertical. The epinotal spines are shorter and broader than in the ♀, almost triangular, and very little longer than their basal width. A rounded, lobe-like expansion covers the stigmata on each side, and projects beyond the lateral profile of the thorax. Wings dark brown, the nervures and stigma piceous. Otherwise like the ♀.

♂. 13.5 mm. Black, flagellum and tarsi dark brown. Pilosity more abundant, but much finer than in the ♀, the hairs being thinner, especially on the abdomen, where they are also more oblique. Flagellum densely and very finely pubescent. Thorax and upper surface of the nodes with a whitish pubescence; sparse and oblique on the thorax; dense, erect, and longer on the dorsum of the epinotum and anterior face of the 1st node (more easily seen when looked at from the side). Head very coarsely rugoso-striate, transversely so on the posterior half, more or less longitudinally on the anterior half, the space between the rugae shining. Thorax coarsely and longitudinally rugoso-striate, the striae interrupted, stronger on the scutellum and posterior half of the mesonotum. Epinotum very coarsely reticulate-rugose, the declivity with some transverse striae. Thorax rather dull, declivity of epinotum smooth and shining. Nodes of petiole microscopically alutaceous, also longitudinally striate, the 1st node somewhat coarsely so, the 2nd node much more closely and finely striate, its median area smooth. Abdomen, except for a narrow median area on each segment, microscopically alutaceous and dull. Head longer than wide, the posterior margin concave. The eyes large, placed somewhat obliquely, occupying quite half the sides of the head. Ocelli fairly large, slightly raised. Clypeus less convex than in the ♀ or ♀. Mandibles oblong, edentate, obliquely truncate apically. Scape short, hardly longer than the distance between the two posterior ocelli; 1st joint of flagellum as wide as long, about one-third the length of the scape; 2nd joint as long as, or a little longer than, the scape; all the remaining joints at least twice as long as wide. Thorax similar to that of the ♀, but narrower, the mesonotum nearly one-quarter longer than wide. Dorsum of epinotum longer than in the ♀, at the base nearly three times wider than long, shorter than the declivity, bluntly angulate on each side at the apex; the declivity vertical. Petiole very long, as long as the abdomen, and nearly as long as the thorax; the peduncle of the 1st joint is as long as the node, the latter one-third longer than wide, and flattened. Second node oblong, rounded

behind, nearly parallel-sided, or only a trifle wider behind than in front; almost twice as long as high, highest behind. Abdomen cordate, moderately convex above, the ventral surface concave, all the segments much wider than long. Legs long and thin. Wings paler than in the ♀.

S. Rhodesia, widely distributed, but chiefly on granite soil; Durban; German S.W. Africa.

The colonies of this species are usually very large, often comprising 1000 or more ♂ ♀. The latter bite and sting fiercely, but the sting is rather blunt, and does not easily pierce the human skin. Although their gait is slow, they are nevertheless active insects, travelling over large areas in search of food, which seems to consist chiefly of other insects. They do not appear to be aphidicolous, nor to attend Membracid or Lepidopterous larvae for their secretions, yet they are known to harbour in their nests many myrmecophilous insects. A nest examined by me* contained the following species of beetles: *Allodina myrmecariae*, Brauns; *Ogmocerus raffrayanus*, Brauns; and *Batrisus myrmecariophilus*, Brauns. The Botanical Gardens in Durban are infested with this species, but the examination of a large number of nests revealed only one species of myrmecophile, *Allodina Kohli*, Wasm., which, however, was plentiful, as many as three dozen being taken in one nest. The nest has numerous entrances, and is surrounded by large heaps of excavated material, often covering an area of several square feet.

(S.A.M., R.M., G.A. colls.)

M. BAUMI, Forel.

Mitth. Schweiz. Ent. Ges., vol. 10, p. 307, ♂, 1895.

“♂. 7·7–9·5 mm. Dark red brown; abdomen dark brown; antennae and legs nearly black. Pilosity blackish brown. The pilose hairs on the tibiae are very oblique, partly adpressed. Sculpture as in *eumenoides*, but more densely reticulate-rugose. The clypeus has a median carina. More especially, the head is distinctly emarginate behind, and wider than in *eumenoides*, with the posterior corners somewhat angularly elongated downwards, and with less convex sides. The eyes are a little larger, more convex, and placed further forwards than in *eumenoides*. Mossamedes.”

Also between Severelela and Khakhea, and Kooa, Kalahari. (Schultze.)

* See ‘Proc. Rhod. Sc. Assn.’ vol. xiii, pt. 3, 1914, pp. 25–42.

M. LAEVIOR, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 445, ♂, 1910.

“♂. 3.9-4.2 mm. Mandibles striate, quadridentate. Head trapezoidal, narrowed in front, at least as wide behind as long, the posterior margin fairly strongly convex. Eyes placed in the posterior third of the head. Clypeus entire, tricarinate, otherwise hardly striate. The scape extends beyond the occipital margin by about one-fifth or one-quarter of its length. The last joint of the antenna is not much thicker than the two preceding. Dorsum of thorax equally convex from front to back; meso-epinotal suture narrow and not deep. The pronotum has lateral teeth below, pointed, and longer than wide; above, it is one and a half times wider than long, slightly narrowed behind and depressed, without lateral margins or ridges. Mesonotum transversely trapezoid, but with the lateral margins feebly raised behind, and ear-shaped; these form the only prominences on the dorsum of the thorax. Dorsum of the epinotum two and a half times longer than wide, continuing the convexity of the upper surface of the thorax, and margined by two even and parallel ridges, but nowhere raised. Spines horizontal, only slightly divergent, slightly longer than the space between them. Declivity of epinotum margined, shorter than the dorsum. First node a little wider than long, wider behind than in front, rounded above, nearly vertically truncate in front and behind, a little shorter than its peduncle. Second node hardly wider than the 1st; wider behind, where it is as wide as long.

“Shining. Cheeks longitudinally striate as far as the margins of the eyes, without reticulations. There are some feeble longitudinal striae on the sides of the frons, and some transverse striae on the pronotum; all the rest of the head and body smooth, without striae or reticulations even on the vertex, occiput, mesonotum, epinotum and nodes, which distinguishes this species from all the others (except *nigerrima*). Erect pilosity fairly fine, long, pointed, yellowish, sparse all over, slightly oblique on the limbs, on which the hairs rise from raised points. Pubescence almost nil. More or less reddish brown; legs brownish yellow.”

Natal. (Haviland.)

M. STRIATA, Stitz. (Plate VII, figs. 90a, b, c.)

Wissen. Ergeb. Z. Afr. Exped., 3, pp. 382-5, 1911.

♂. 6.5-8.2 mm. Reddish brown; the front of the head, the antennae, legs and peduncle of the 1st joint of the petiole lighter.

Very similar to *eumenoides*, and differing from it in the following characters. The pilosity is shorter and more oblique, somewhat scanty. More shining, especially the head, pro-mesonotum, 2nd node of the petiole, and the legs; the tibiae are shining (dull in *eumenoides*). The sculpture is feebler and less close. The head has only longitudinal striae, without any transverse anastomoses or reticulations. The pro-mesonotum has fewer and more continuous longitudinal striae, and is less strongly marginate at the sides and in front. There is no trace of the pro-mesonotal suture on the dorsum (faintly indicated by a depression in *eumenoides*). The pronotum below has far larger lateral teeth, these being plainly visible, and projecting well beyond the lateral outline, when viewed from above. The posterior lateral lobes or carinae of the mesonotum are lower and less divergent outwardly; the lateral margins of the dorsum of epinotum are straighter and less raised. The meso-epinotal suture is not so deep, and the base of the epinotum is narrower. The spines are thinner and relatively longer. The 1st node of the petiole is higher, higher than the 2nd (as high as the 2nd in *eumenoides*), and is somewhat truncate behind (in *eumenoides* the dorsal and posterior outlines form a continuous curve). The peduncle of the 1st joint is also a little shorter, being only as long as the node. The tibiae and scapes are less strongly striated.

♀. 15 mm. Entirely dark brown, almost piceous, except the anterior half of the head, which is reddish brown. It differs from *eumenoides*, to which it bears a close resemblance, in the following characters. The head is less narrowed in front, being almost as wide in front as behind; the posterior angles are less rounded, and the posterior margin is straight, not convex, as in *eumenoides*. The sculpture of the head is not quite so strong, and the space between the reticulations is shining. The sculpture of the mesonotum stronger, and composed of fewer striae. The dorsum of the epinotum, although short, is distinctly delimited from the declivity, and the space between the spines is widely arcuate, not acutely angular, as in *eumenoides* (see Pl. VII, figs. 89a, b; 90a, b). The lobe-like expansions covering the stigmata are also more angular and dilated than in *eumenoides*. The spines are shorter, and hardly divergent. The peduncle of the 1st joint of the petiole is wider posteriorly and shorter. The wings are much paler coloured, being ochreous, not brown as in the other species. The anterior face of the 1st node has a dense yellowish pubescence, fairly long, entirely absent in the ♀ of *eumenoides*.

♂. 13.5 mm. Black. This differs from the ♂ of *eumenoides* in having a much finer sculpture and finer, less dense, but longer pilosity. The pubescence of the thorax is also less noticeable. The dorsum of

the declivity is much longer and more oblique, quite as long as the declivity, or a little longer; the apical angles of the dorsum are also narrower and more dentiform. Otherwise similar.

Bembesi, Plumtree, and Bulawayo, S. Rhodesia. The nest is smaller and less populous than that of *eumenoides*. (S.A.M., R.M., G.A. colls.)

M. NIGRA, Mayr. (Plate VII, fig. 91.)

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 755, ♀, 1862.

♀. 5.5 mm. Brownish black; antennae and legs a little lighter. Pilosity long, yellowish, fairly abundant, erect on the head and thorax, slightly oblique on the abdomen and petiole. Shining. Very strongly, but not densely, longitudinally striate on the head, the striae more or less interrupted in the occipital region. Pronotum also strongly striate transversely; mesonotum with about 8 longitudinal striae; epinotum with 3 or 4 transverse striae on the raised basal half of the dorsum, and about 5 or 6 longitudinal ones on the posterior half, which do not reach quite as far as the brow of the declivity. Sides of thorax more or less obliquely striate, the striae finer than on the dorsum. Tibiae and scapes smooth, not striate as in *eumenoides* and *striata*. The clypeus has one long median stria or carinula, and two or three shorter lateral striae. Mandibles strongly and longitudinally striate, quadridentate. The scape extends beyond the occipital margin by nearly one-third of its length. Head as long as wide, very little narrower in front than behind, the posterior margin shallowly concave. Eyes convex, fairly prominent, placed just behind the middle of the sides. Pronotum three times wider than long, the teeth below prominent, triangular, about as long as their basal width. Promesonotal suture obsolete, meso-epinotal not deep, much shallower than in *eumenoides*. Mesonotum only slightly raised behind, hardly expanded laterally, not auriculate-carinate as in *eumenoides*. Dorsum of epinotum horizontal, only feebly lobed at the base, almost twice as long as the nearly vertical declivity, twice as long as it is wide at the base. The spines are almost horizontal, slightly divergent, acute, as long as the declivity. Peduncle of 1st joint of petiole thick, hardly as long as the node; the latter a little longer than wide, flattened above, not conical, the anterior face much shorter than the dorsal surface, and compressed laterally, so as to form a sharp vertical edge; the posterior face very oblique, about half as long as the dorsal. Second node a little higher than the 1st, subconical, the apex behind the middle, the anterior face oblique and twice as long as the vertical

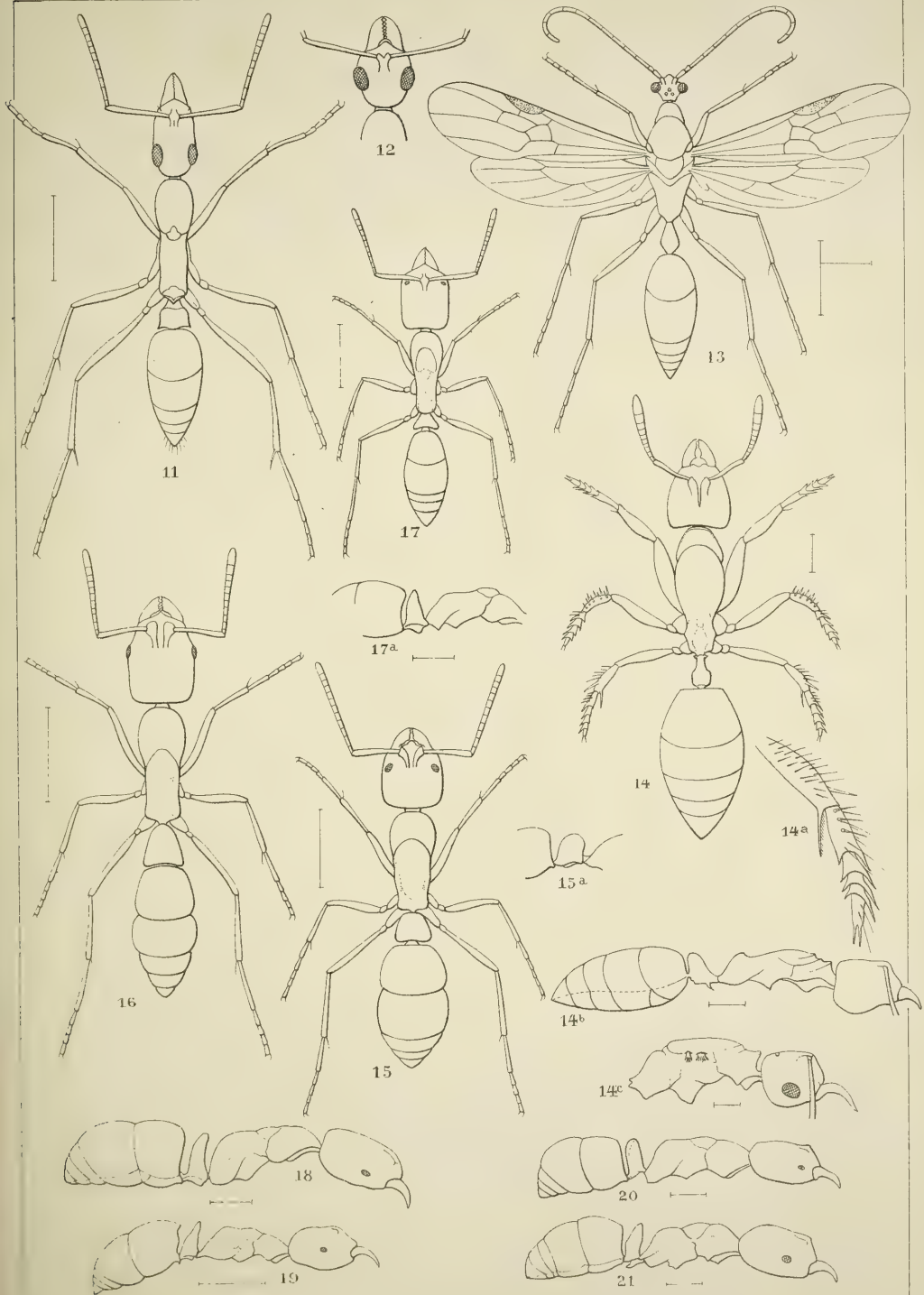
posterior face, barely wider than the 1st node. Base of abdomen hardly truncate, the lateral angles considerably rounded.

♂ (hitherto undescribed). 6.6 mm. Dark brown, the anterior half of the head, the antennae, mandibles and legs paler, more reddish brown. Pilosity finer and more abundant than in the ♀. Flagellum with short, erect, pilose hairs, and also finely pubescent. The rest of the body without pubescence. Shining. Head longitudinally striato-rugose, more strongly on the cheeks than elsewhere. Mesonotum and scutellum feebly and longitudinally rugose, strongest on the posterior half of the mesonotum. Epinotum strongly and transversely striate. A few feeble striae on the 1st node, the sides of the thorax finely and longitudinally striate; the rest of the body smooth. Head distinctly wider than long. Eyes very large, occupying two-thirds of the sides of the head. Mandibles edentate, oblong, slightly acuminate at the apex, not touching when closed. Scapes rather long, reaching the occipital margin of the head, one and two-thirds longer than the 2nd joint of the flagellum. Dorsum of epinotum widely expanded above the stigmatic orifices, nearly three-quarters as long as wide at the base, moderately convex transversely and lengthwise, oblique, twice as long as the declivity. Brow of declivity rounded, not bituberculate or bidentate. First joint of petiole nearly twice as long as the 2nd, the node not distinctly delimited. Both nodes considerably flattened, the 2nd a little wider than the 1st. Wings pale ochreous, the nervures and stigma dark ochreous.

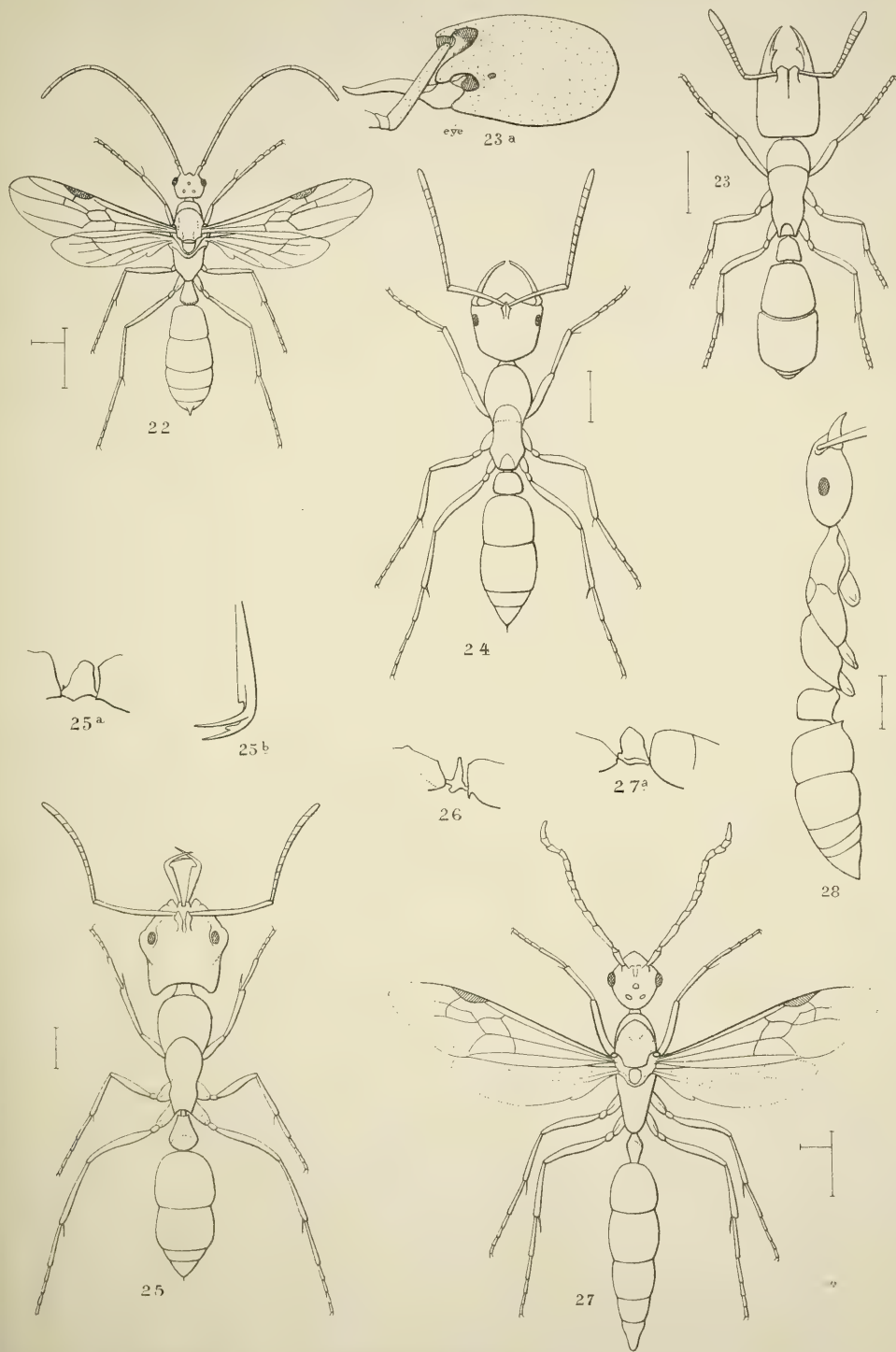
Montagu Pass, Cape Prov. (Brauns.) . . . Cape Prov. (ex S.A.M. coll., ♀ and ♂). (S.A.M., R.M., G.A. colls.)

M. NIGERRIMA, n. sp. (Plate VII, fig. 92.)

♀. 4.8 mm. Allied to *laevior*, Forel. Entirely black, except the mandibles, which are slightly brownish black. Pilosity long and black, sparse, erect; slightly oblique on the legs and abdomen. Smooth and shining. Mandibles striate and quadridentate. Scapes striate. The clypeus has three feeble longitudinal striae, which do not reach the convex anterior margin. Cheeks feebly and longitudinally striate in front of the eyes. A median stria extends over the whole of the vertex, head otherwise smooth. Pronotum finely but distinctly margined. It has a median longitudinal stria, which is continued over the mesonotum. The latter has in addition one or two lateral striae. The rest of the body smooth, without striae or punctures. Head rather quadrate, hardly narrower in front than behind, as wide as long, the posterior margin convex. Eyes very convex and prominent, placed a little behind the middle of the sides.



- | | | | | | |
|-----------------|---|---------------------------|-----------------|------------------------------------|----------------|
| 11 | <i>Ophthalmopone Berthoudi</i> Forel. | ♂ × 4. | 15 ^a | <i>Pachycondyla laevis</i> Arnold. | ♀ node × 4. |
| 12 | " <i>hottentota</i> Emery. | ♂ × 4. | 16 | " <i>granosa</i> Roger. | ♂ × 4. |
| 13 | " <i>Berthoudi</i> Forel. | ♂ × 4. | 17 | <i>Euponera cafraria</i> Smith. | ♂ × 4. |
| 14 | <i>Centromyrmex Constanciae</i> Arnold. | ♂ × 9. | 17 ^a | " | ♂ × 5 profile. |
| 14 ^a | " | tibia & lar sus hind leg. | 18 | " <i>Wroughtoni</i> Forel. | ♀ × 9. |
| 14 ^b | " | profile. | 19 | " <i>Peringueyi</i> Emery. | ♂ × 4½. |
| 14 ^c | " | profile. | 20 | " <i>fossigera</i> Mayr. | ♀ × 9. |
| 15 | <i>Pachycondyla laevis</i> Arnold. | ♂ × 4. | 21 | " <i>sennaarensis</i> Mayr. | ♂ × 9. |



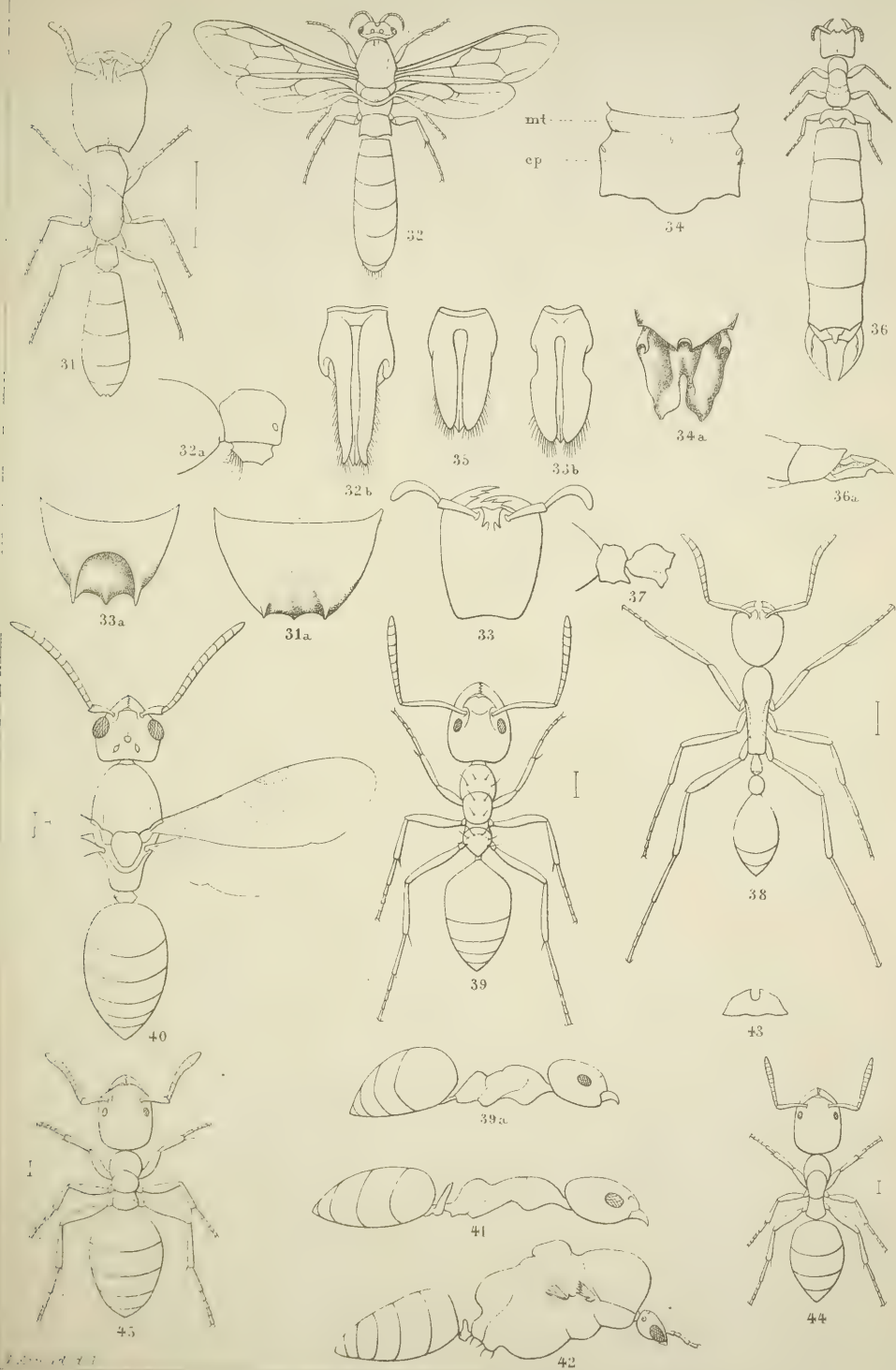
- 22 *Euponera cafraria* Smith. ♂ × 4.
 23 *Plectroctena subterranea* Arnold. ♀ × 6.
 23^a head in profile × 16.
 24 *Leptogenys maxillosa* Smith. ♀ × 6.
 25 *Anochetus Levallantei* Emery. ♀ × 9.
 25^a node × 9.

- 25^b *Anochetus Levallantei* mandible × 20.
 26 " *puncticeps* Mayr ♀ node × 12.
 27 *Leptogenys Arnoldi* Forel ♂ × 6.
 27^a " " " node × 9.
 28 " " " ♀ × 9.

ERRATA.

Pl. 4, description of Fig. 33, *for* 32 a. \times 20. 32 b. $\mathfrak{J} \times 3$ *read* 33 a. \times 20.
33 b. $\mathfrak{J} \times 3$.

Pl. 4, description of Fig. 43, *for* $\mathfrak{J} \times 10$ *read* $\mathfrak{J} \times 10$.



- [illegible]

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VOLUME XIV.

PART III, containing :—

- 1.—*A Monograph of the Formicidae of South Africa (Myrmicinae).* By GEORGE ARNOLD, M.Sc., A.R.C.S., F.E.S.,
Curator of the Rhodesia Museum, Bulawayo, pp. 271–402.



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Scapes long, extending beyond the occipital margin by nearly one-third of their length. The pro-mesonotal suture faintly indicated by a shallow impression; the meso-epinotal suture very deep. The anterior and posterior lateral dorsal angles of the pronotum fairly pronounced, the ventral lateral angles produced into large triangular teeth, a little longer than their basal width, very prominent, and projecting well beyond the lateral outline of the thorax, when viewed from above. Pronotum twice as wide as long. Mesonotum posteriorly with the lateral carinae high, almost angular when seen from the side, but not expanded outwards. Base of the epinotum feebly raised and slightly expanded outwards at the sides. The dorsum of the epinotum margined, about one-quarter longer than wide at the base, distinctly concave transversely. The spines are horizontal, subparallel, about as long as the distance between them. The declivity is sharply margined at the sides, nearly vertical, shorter than the dorsum. The peduncle of the 1st joint of the petiole long and thin, a trifle longer than the node. The latter is compressed above, as high as long, its dorsal profile convex, and including the narrow posterior portion as long as wide, the anterior and posterior faces nearly vertical. The 2nd node is also laterally compressed above, but not so much as the 1st node, longer than the 1st, but hardly wider, subconical, highest posteriorly. Base of abdomen straight, the corners rounded. Legs long and slender.

Matopo Hills, S. Rhod. 1 ♂. In my collection.

TRIBE TETRAMORIINI, Emery.

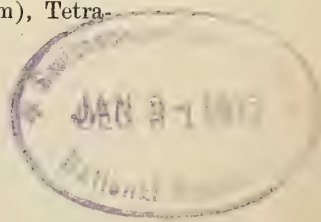
This tribe includes the following genera: Tetramorium (with sub-genera Triglyphothrix, Xiphomyrmex and Decamorium), Tetramyrma and Rhoptromyrmx.

GENUS TETRAMORIUM, Mayr.

Verh. Zool. Bot. Ges. Wien, v, p. 423, 1855.

Characters.

♀. Antennae 10-, 11- or 12-jointed, with a 3-jointed club; maxillary palpi 4-jointed, labial palpi 3-jointed. The posterior margin of the clypeus is raised on each side into a ridge or carina, which separates the front of the clypeus from the antennal socket (see Text-fig. 19, A and B). Frontal carinae short and fairly wide



apart, or long and forming the upper margin of a scrobe. Antennal scrobes frequently present. Promesonotal suture generally obsolete or feebly defined, meso-epinotal suture usually distinct. Epinotum armed above with two spines or teeth, and below with two episternal teeth or lobes. Nodes of petiole variable, the 1st node always pedunculate, the 2nd node usually wider than the 1st. Abdomen oval.

♀. Like the ♂ but larger. Pronotum usually very little exposed above; mesonotum and scutellum raised above the level of the pro- and epinotum. The latter with stouter and shorter spines or teeth than in the ♂. Fore wing with one cubital, one discoidal and a closed radial cell. Otherwise like the ♂.

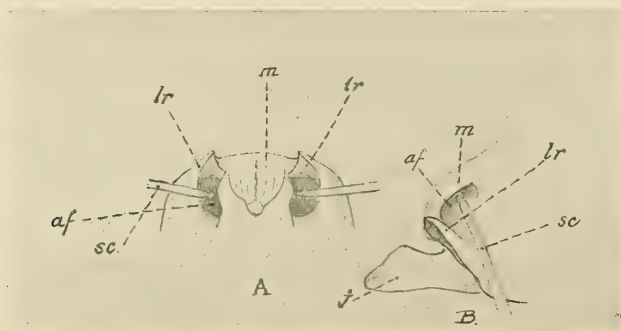


FIG. 19.—A. Dorsal. B. Profile. *m*. Median area of the clypeus. *lr*. Lateral ridges of the clypeus. *af*. Antennal fossa or socket. *sc*. Scape. *j*. Mandible. Anterior portion of the head of a *Tetramorium*, the depth of the antennal fossae slightly exaggerated.

♂. Antennae 10-jointed,* the 2nd joint of the flagellum very long and representing four joints fused together. Head small, eyes large. Mandibles small but distinctly dentate. Pronotum not visible from above; mesonotum gibbous, Mayrian furrows present. Epinotum truncate and bidentate.

The clypeus has usually at least one median and longitudinal raised line, which when fairly high may be termed a carina. It should be noted, however, that the clypeus very often bears other raised lines on each side of, and quite as strong as the median carina.

The lateral ridges are almost obsolete in the sub-genus *Decamorium*. The frontal carinae are often produced backwards almost to the

* *T. solidum*, var. *grootensis*, Forel, is an exception, having 12-jointed antennae, and *T. Emeryi*, Mayr, has 13-jointed antennae.

occipital margin, and are also somewhat expanded outwardly, forming the upper wall of a groove, the scrobe, which lies below them. This groove is sometimes divided into two halves by a longitudinal carina, the upper and lower halves receiving the folded scape and flagellum. The scrobe in such a case is complete, and is usually distinguished from the rest of the cheeks by its smoother and more shining surface. It is particularly well developed in the sub-genera *Triglyphothrix* and *Xiphomyrmex*. But in most species of *Tetramorium* (s. str.), only the upper half of the scrobe, that which accommodates the scape, is distinct, forming only a demi-scrobe; or again, it may be defined only in its anterior region, in which case it is referred to in the following pages as a "trace of a scrobe." The sides of the declivity of the epinotum are usually bounded by a raised margin, which terminates below in two small teeth or lobes. These episternal teeth are in most cases much smaller than the epinotal teeth above them.

It should be observed that the 1st node of the petiole is inclined at various angles, and that it is therefore impracticable to take the measure of the length of the node through its thickness, as unfortunately some authors appear to have done. In the following pages, the length of the 1st node is measured from the anterior to the posterior margin of the dorsal or posterior-dorsal face. It is also necessary to define some of the terms used in these pages in describing the sculpture of the chitin.

In regard to such terms as "rugose," "rugulose," "striate," &c., a certain looseness of definition exists, which is plainly apparent, if the reader will compare half a dozen insects of different orders with their original descriptions. The term "striate," for example, has been used to express a form of sculpture consisting of raised lines, as well as one which is made up of incised lines or fine grooves. Similarly, that which some authors describe as "coarsely striate" has been termed "rugose" by others. It has therefore seemed desirable to append a short glossary, defining the sense in which I have used certain words.

rugae (adj. *rugose*) = raised lines, usually rather coarse, which may be more or less parallel over their whole length, but which in part are also somewhat irregular, broken, wavy, sinuate or zigzagged.

striae (adj. *striate*) = raised lines which are parallel, straight and continuous.

reticulate = a sculpture consisting of a network, the strands of which are composed of raised lines.

reticulate-rugose = a sculpture consisting of *rugae*, more or less

broken up in parts and connected by transverse strands or branches to form a more or less distinct network.

sulcate = a sculpture composed of incised lines or fine grooves (not common in South African ants).

rugulose = a sculpture composed of very fine wavy lines.

alutaceous = a sculpture composed of a very fine or microscopic network.

reticulate-punctate = a close and even puncturation, in which the spaces between the punctures are not wider than the punctures themselves, and form more or less of a network around them.

I have used the term as an equivalent of the German "Fingerhutartig punktiert" (punctured like a thimble).

The sense of such combinations as "striato-rugose," "rugoso-striate" are sufficiently evident, and need no further comment.

The genus *Tetramorium* is well represented in our regions, and is composed of active species which generally nest in the ground. The colonies are often large, and are in some cases known to harbour many myrmecophilous insects. I have not, however, found any in the nests of our Rhodesian species.

I have thought it necessary to reduce *Triglyphothrix*, Forel, to the rank of a sub-genus of *Tetramorium*, since there is not one character or even a set of characters which can be used consistently as a basis of differentiation.

In *Triglyphothrix Arnoldi*, Forel, the hairs are simple as in *Tetramorium* s. str.; in *Triglyphothrix Marleyi* which has branched hairs, there is no scrobe. Also no reliance can be placed on the width of the nodes, which varies considerably. In the new species, *Tetramorium Ericae*, the shape of the nodes and the general facies of the insect is decidedly like that of *Triglyphothrix*, but the hairs are simple, and the nodes only moderately wide, so that it might just as well be assigned to that sub-genus as to *Tetramorium*.

The sub-genera of *Tetramorium* may be distinguished as follows:

1. ♀ and ♀, antennae 12-jointed; ♂, antennae 10-jointed.
 - (a) Hairs usually branched, or, if not, both nodes much wider than long, the 1st node never squamiform. *Triglyphothrix*, Forel.
 - (b) Hairs not branched; the 2nd node generally wider than long, or, if both nodes are much wider than long, then the 1st is squamiform. *Tetramorium*, Mayr.
2. ♀ and ♀, antennae 11-jointed; ♂, antennae 10-jointed. *Xiphomyrmex*, Forel.
3. ♀, ♀, and ♂, antennae 10-jointed. *Decamorium*, Forel.

Key to the ♂♂ of *Tetramorium* (s. str.).

- (8) 1. First node of petiole more or less squamiform.
- (3) 2. First node of petiole strongly and transversely striate; large species, 4.5-5 mm. *grandinode*, Santschi, and var. *hopensis*, Forel.
- (2) 3. First node of petiole smooth; small species, 3 mm.
- (5) 4. Second node of petiole less than twice as wide as long, its sides rounded *squaminode*, Santschi.
- (4) 5. Second node of petiole twice as wide as long.
- (7) 6. Sides of 2nd node, seen from above, angular; head brown. *squaminode*, race *do*, Forel.
- (6) 7. Sides of 2nd node straight; head dark yellow. *squaminode*, var. *flaviceps*, Arnold.
- (1) 8. First node of petiole not squamiform.
- (12) 9. Eyes very small, composed of a single facet.
- (11) 10. First node of petiole considerably narrowed in front; seen from above, the anterior margin acutely convex or conical. *subcoecum*, Forel, var. *inscia*, Forel.
- (10) 11. First node not much narrower in front than behind; seen from above, the anterior margin feebly convex or straight. *Traegaordhi*, Santschi.
- (9) 12. Eyes not very small, composed of several facets.
- (28) 13. Scape extending back as far as, or beyond the occipital margin.*
- (15) 14. Promesonotum smooth and shining *laevithorax*, Emery.
- (14) 15. Promesonotum sculptured, not very shining.
- (17) 16. First node wider than long *Frenchi*, Forel.
- (16) 17. First node longer than wide, or at least as long as wide.
- (23) 18. First node coarsely sculptured, rugoso-punctate.
- (20) 19. A demi-scribe present *setigerum*, Mayr, race *quaerens*, Forel.
- (19) 20. Scribes entirely absent.
- (22) 21. Clypeus convex transversely; epinotal spines short, shorter than the interval between their bases; eyes not very large . *Gladstonei*, Forel.
- (21) 22. Clypeus flat transversely; epinotal spines long, longer than the interval between their bases; eyes decidedly large . *longicorne*, Forel.
- (18) 23. First node finely sculptured, at least not rugoso-punctate.
- (27) 24. Pronotum with at least a few longitudinal rugae.
- (26) 25. Reddish-brown; 1st node distinctly longer than wide. *Blochmanni*, Forel, race *continentis*, Forel.
- (25) 26. Yellowish-red; 1st node barely longer than wide. *Bequaerti*, Forel, race *bulawayensis*, Forel.
- (24) 27. Pronotum very finely reticulate only *quadrispinosum*, Emery.
- (13) 28. Scapes not extending back as far as the occipital margin.
- (32) 29. Pubescent hairs on the body flattened, almost scale-like and closely adpressed.
- (31) 30. First node above, nearly twice as wide behind as in front; epinotal spines as long as the interval between their bases. *setuliferum*, Emery.

* *Jauresi*, Forel, has the scapes *almost* reaching the occipital margin, and is therefore included in the alternative series (28).

- (30) 31. First node above, one and a half times as wide behind as in front; epinotal spines shorter than the interval between their bases.
setuliferum, race *cluna*, Forel.
- (29) 32. Pubescent hairs simple, not scale-like.
- (34) 33. Epinotal spines very long, as long as the dorsum of the epinotum.
Joffrei, Forel.
- (33) 34. Epinotal spines shorter, not as long as the dorsum of the epinotum.
- (42) 35. Epinotal spines distinctly longer than they are wide at the base.
- (39) 36. Pronotum finely striated, not reticulate.
- (38) 37. Dorsal face of 1st node distinctly longer than wide; dark yellowish-red *Popovici*, Forel.
- (37) 38. Dorsal face of 1st node as wide as, or a little wider than long; pale ochreous *capensis*, Mayr., and var. *Braunsi*, Forel.
- (36) 39. Pronotum reticulate or sparsely rugose.
- (41) 40. Pronotum merely rugose, joining the mesonotum in a curve.
Grassi, Emery.
- (40) 41. Pronotum with very strong and wide reticulations, its junction with the mesonotum angular. *guineense*, Fab.
- (35) 42. Epinotal spines not longer than they are wide at the base.
- (52) 43. Larger species, not less than 3.5 mm. long.
- (47) 44. No trace of a scrobe.
- (46) 45. Epinotal spines (teeth) longer than the episternal; scapes not nearly reaching the occipital margin . . . *solidum*, Emery, var. *signata*, Forel.
- (45) 46. Epinotal teeth not longer than the episternal; scapes almost reaching back as far as the occipital margin . . . *Jauresi*, Forel.
- (44) 47. A more or less distinct demi-scrobe present.
- (51) 48. Dorsal profile of thorax feebly convex or straight; epinotal teeth distinct.
- (50) 49. Larger species, 5 mm. or more; 1st segment of petiole with the peduncle less than half as long as the node . . . *simulator*, Arnold.
- (49) 50. Smaller species, 3.5 mm.; peduncle of 1st segment as long as the node.
lobulicorne, Santschi.
- (48) 51. Dorsal profile of the thorax strongly angulated at the pro-mesonotal junction; epinotal teeth almost obsolete.
Emeryi, Mayr, race *cristulatum*, Forel.
- (43) 52. Smaller species, less than 3.5 mm. long.
- (54) 53. Abdomen dull, closely and finely punctured.
semi-reticulatum, Arnold.
- (53) 54. Abdomen shining, not closely punctured, or only at the extreme base.
- (64) 55. Epinotal teeth fairly large, at least distinctly larger and longer than the episternal.
- (57) 56. Colour entirely black *oculatum*, Forel.
- (56) 57. Colour more or less yellow or yellowish-red.
- (59) 58. Second node of petiole as wide as long; a trace of a scrobe present.
simillimum, Smith, var. *shilohensis*, Forel.
- (58) 59. Second node wider than long.
- (61) 60. Sculpture fine; no trace of a scrobe; 2.2 mm. long.
pusillum, Emery, var. *mossamedensis*, Forel.
- (60) 61. Sculpture coarse.

- (63) 62. A slight trace of a scrobe present; 2.5-2.9 mm. long . *longoi*, Forel.
(62) 63. A very distinct demi-scrobe present . . . *Ericae*, Arnold.
(55) 64. Epinotal teeth small, as large as or smaller than the episternal, or nearly obsolete.
(66) 65. First node, seen from the side, subconical; its anterior margin strongly convex; episternal teeth larger than the epinotal.
simillimum, race *isipingense*, Forel.
(65) 66. First node merely slightly convex or even flat in profile; its anterior margin almost straight.
(68) 67. Pro-mesonotum shining, almost smooth.
simillimum, var. *Poweri*, Forel.
(67) 68. Pro-mesonotum dull, distinctly sculptured.
(70) 69. Scrobes entirely absent; the frontal carinae do not extend back beyond the middle of the head . . . *pusillum*, race *tablense*, Forel.
(69) 70. Either a trace of a scrobe present, or the frontal carinae extend back nearly as far as the occipital margin.
(72) 71. Dorsum of epinotum two and a half times longer than the declivity.
pusillum, race *ladismithensis*, Forel.
(71) 72. Dorsum of epinotum less than twice as long as the declivity.
(74) 73. Head slightly shining, not longer than wide; 2.5 mm.
intextum, Santschi, var. *cataractae*, Santschi.
(73) 74. Head dull, a little longer than wide; 2.2 mm. . . *simillimum*, Smith.

The following species, which I have not seen, have been omitted from the above key: *Blochmanni*, race *Petersi*, Forel; *bacchus*, Forel; *titus*, Forel; *setigerum*, Mayr, i. sp.; *Emeryi*, Mayr, i. sp.; *caespitum*, race *Schultzei*, Forel; *Grassi*, var. *laevigatum*, Mayr, and var. *simulans*, Santschi; *solidum*, race *lugubre*, Forel; *Simoni*, Emery; *sericeiventris*, race *femoratum*, Emery; *sinillimum*, races *Bothae* and *delagoensis*, Forel; *quineense*, var. *erectum*, Emery.

T. QUADRISPINOSUM, Emery.

Bull. Soc. Ent. Ital., vol. 18, p. 362, ♀, 1886.

♂. 3.3 mm. Dark brown or piceous; the anterior half of the head and the mesonotum lighter and more reddish-brown; coxae, tibiae, antennae, and mandibles dark reddish-yellow, tarsi brownish-yellow. A few whitish and thick, blunt hairs on the clypeus, nodes, and abdomen. Legs and antennae with a very sparse, short, and decumbent pubescence, the rest of the body without pubescence.

Exceedingly minutely reticulate or alutaceous on the head, thorax, and nodes, the sculpture of the head and epinotum being a little stronger than the rest. In addition, the head is fairly strongly reticulate in front, between the eyes and frontal carinae. The vertex and frons are also very finely and longitudinally striate. There are a few

very shallow punctures on the posterior half of the head and on the pronotum. Abdomen smooth and moderately shining, microscopically alutaceous near the base. Nodes nitidulous, head and thorax rather dull.

Head hardly longer than wide, the sides feebly convex, the posterior margin straight, the posterior angles moderately rounded, as wide in front as behind. Eyes placed at the middle of the sides of the head. Clypeus with a distinct median carina, not very convex transversely, the anterior margin almost straight. Frontal area distinct; a shallow frontal sulcus present, not extending beyond the middle of the vertex. Frontal carinae short. Mandibles 6-dentate, closely and finely striate. The scape of the antenna extends back beyond the occipital margin by not more than its own thickness; 1st joint of flagellum not quite as long as the 2nd, 3rd, and 4th joints taken together. Thoracic sutures obsolete. The thorax is feebly marginate in front, the shoulders of the pronotum subangular and low. The anterior third of the promesonotum slopes downwards and forwards, the remaining portion is level with the epinotum. The thorax is not strongly constricted between the meso- and epinotum. Dorsum of epinotum nearly twice as long as the declivity; epinotal spines divergent, directed upwards and backwards, a little longer than their basal width, distinctly shorter than the interval between their bases; episternal teeth almost as long as the epinotal. First node of the petiole wider behind than in front, about one-third longer than wide, feebly convex transversely above, the anterior face short and oblique, the posterior face short and vertical. The node is twice as long as its peduncle, the latter bearing a small tooth below. Second node a little wider than long, widest behind, wider than the 1st, subglobose. Sides of abdomen moderately convex. Legs slender and rather long; femora hardly swollen in the middle.

Table Mountain. (S.A.M., R.M., G.A. colls.)

T. BLOCHMANNI, Forel, race CONTINENTIS, Forel.

Mitth. Schweiz. Ent. Ges., vol. 7, p. 384, ♀, 1887.

(Race) Ann. Soc. Ent. Belg., vol. 54, p. 426, ♀, 1910.

♀. 3.8 mm. Head, thorax, and nodes dark castaneous, abdomen brownish-black. Occasionally the head, thorax, and nodes are paler, more yellowish-red, with the abdomen brown. Antennae and legs reddish-brown, the middle and hind femora dark brown. Pilosity and pubescence as in *quadrispinosum*.

Head, thorax, and nodes dull, finely reticulate-punctate, and also

longitudinally striate and partly rugose. The head is longitudinally striate all over, not merely on the frons, cheeks, and vertex, as in the preceding species. Prothorax fairly strongly and longitudinally rugose. Epinotal spines longer than in *quadrispinosum*, almost as long as the interval between their bases; the episternal teeth not much shorter than the epinotal. The 1st node of the petiole is not so narrow as in the *quadrispinosum*. Abdomen microscopically rugulose near the base, the remaining portion smooth and shining. The sculpture of the head, thorax, and nodes is decidedly coarser than in *quadrispinosum*, but otherwise the two species are very similar and closely allied. In some specimens the puncturation and rugae are stronger than in others, and the meso-epinotal suture is also sometimes fairly clearly defined.

♀. 4.2 mm. Head, thorax, nodes, legs, and antennae dark red (burnt sienna), abdomen reddish-brown, the apical margins of the segments paler. The sculpture of the head is like that of the ♀. Pronotum coarsely reticulate-rugose, mesonotum strongly and evenly longitudinally striate (more finely so on the anterior half of the scutellum), dorsum of epinotum with 4 or 5 strong and transverse rugae, the declivity finely reticulate, the sides of the thorax finely and longitudinally striate, the nodes of the petiole dull, granulate, and very sparsely and shallowly punctured. Abdomen dull, very finely rugulose. Head and thorax feebly shining between the striae. Pronotum exposed above only at the shoulders. Mesonotum feebly convex in front transversely, fairly flat behind. Dorsum of epinotum as long as the scutellum. Epinotal spines stouter than in the ♂. First node of petiole wider than in the ♂, as wide as long. Second node more or less spherical, moderately convex above from side to side. Wings tinged with yellow, nervures and stigma brownish-yellow. Otherwise like the ♂.

♂. 4.5 mm. Head brownish yellow, the vertex, in front of and between the ocelli, brown. Thorax brownish-yellow or reddish-yellow, the pronotum paler, the base of the scutellum, the apical half of the epinotum, and the nodes pale brown; abdomen brownish-black. Legs, antennae, and mandibles dirty yellow. Head dull, very finely reticulate and striate. The striation is longitudinal in front, transverse between the ocelli and at the posterior corners. Pronotum exceedingly finely reticulate; mesonotum posteriorly and the scutellum very finely, regularly, and longitudinally striate. The scutellum is also somewhat reticulate-punctate. Epinotum and nodes reticulate-punctate and dull. Mesonotum smooth and shining in front. Abdomen microscopically reticulate and shining. Head as long as

wide, about as wide in front as behind, widest across the eyes; the latter occupy about one-third of the sides and are placed a little in front of the middle. Scape of antenna as long as the 2nd joint of the flagellum, and extending back as far as the anterior ocellus. Clypeus with a median carina. Frontal carinae well developed. Mandibles triangular, 5-dentate, dull and finely rugulose, the masticatory margin dark brown. Mayrian furrows on the mesonotum distinct. Mesonotum and scutellum raised above the level of the dorsum of the epinotum. The latter is oblique, sloping down to the brow of the declivity, and is about one-third longer than the declivity. Epinotal spines well developed, the episternal very obtuse. The 1st node of the petiole is nearly twice as long as wide, the lateral margins of the dorsal face almost parallel. Second node like that of the ♀ but longer, as long as wide, less convex above transversely than in the ♀. Legs long and thin. Wings as in the ♀.

Bulawayo and S. Rhodesia generally, common. The nest, which is in the ground, is usually surrounded by a more or less circular crater of earth. (S.A.M., R.M., G.A. colls.)

Race *CONTINENTIS*, var. *EUDOXIA*, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 231, ♂, 1914.

♂. 3·8–4 mm. Darker than the type of the race; dark brown, the abdomen black, the mandibles and limbs rusty-red. The sculpture is finer than in the race, the longitudinal striae being much less coarse. The epinotal spines are slightly longer. This variety is almost intermediate in its structure and general appearance between *quadripinosum* and race *continentis*.

Willowmore, Cape Prov. (S.A.M., R.M., G.A., colls.)

Race *PETERSI*, Forel.

Schultze, Reise Süd Afrika, vol. 4, p. 19, ♂, 1910.

“♂. 2·8–3·2 mm. Mandibles sharply striated, with a feebly convex external margin, 3 strong teeth in front and 4 or more smaller ones behind. Clypeus sharply carinate. Frontal area triangular. Frontal carinae divergent, not long. No scrobe and no depression for the scape. Head rectangular, distinctly longer than wide, moderately concave behind, the sides feebly convex, as wide behind as in front. Eyes not large, convex, placed in the middle of the sides. The scape extends beyond the hind margin of the head by about twice its own thickness; 3rd and 4th joints of the flagellum about as wide as long, the rest all longer than wide. Pronotum convex in

front. Dorsum of the thorax almost straight, widely and shallowly impressed in the middle. Dorsum of epinotum much longer than wide, moderately convex, much longer than the declivity. Epinotal spines small, acute and nearly as long as the interval between them; the episternal spines as long and as acute as the upper ones. Petiole, particularly the 1st segment, shaped as in *Blochmanni*, i. sp., and also similarly curved. Second node somewhat longer, nearly as long as wide (the 1st node is much longer than wide). Shining. Head, thorax, and petiole irregularly and feebly reticulate-rugose. Abdomen quite smooth. Pilosity moderate, yellowish; the pubescence almost decumbent and very sparse. Tibiae, femora, and scapes with almost decumbent pubescence. Yellowish-red to reddish-yellow. Mandibles and tarsi a paler yellow. Abdomen brownish.

Okahandja, S. W. Africa."

T. BEQUAERTI, Forel.

Rev. Zool. Afric., vol, 2, p. 318, ♀, 1913.

"♀. 3.7-4.1 mm. Closely allied to *Blochmanni*, Forel, from which it may be distinguished by having the whole body, legs and scapes covered with short, erect and reddish-yellow hairs. Those on the legs and scapes are very short, somewhat truncate at the apex and slightly oblique. The head is still more emarginate behind than in the *Blochmanni*, and has the sides straighter. A little more shining than in *Blochmanni*, but sculptured as in race *continentis* of that species, reticulate or reticulate-punctate, with some distinct but sparse punctures on the head and thorax. The thorax has also some coarser and more accentuated longitudinal rugae; on the head these are finer, and mostly in the middle. The petiole has some reticulate and very coarse rugae. Abdomen subopaque, only finely reticulate. Rusty-red, with posterior half or two-thirds of the abdomen brown. Otherwise like *Blochmanni*.

"Lake Kabwe, Katanga. (Dr. Bequaert)."

Although this species has not yet been recorded from our region, I include it here, as it is likely to be found within the same.

Race BULAWAYENSIS, Forel.

Ann. Soc. Ent. Belg., vol, 57, p. 119, ♀, 1913.

♀. 3 mm. Much smaller than the type of the species. Yellowish-red (burnt sienna), the legs, antennae and mandibles dark yellow, somewhat reddish. The head is shorter than in the type, being barely one-sixth longer than wide (mandibles excluded), the

posterior margin is convex, and the posterior angles are much more rounded and obtuse. The scape extends beyond the hind margin of the head by about as much as the length of the 1st joint of the flagellum. The frontal carinae extend back as fine raised lines as far as the level of the eyes. Head and pro-mesonotum longitudinally rugose, mesonotum and epinotum also reticulate-punctate, the epinotum also transversely rugose. Epinotal spines acute, shorter than half the length of the interval between their bases. The episternal spines are not much shorter than the epinotal. Dorsum of epinotum one and a half times longer than wide, quite twice as long as the oblique declivity, moderately convex transversely, feebly so lengthwise. The 1st node of the petiole is widest behind, nearly as wide there as it is long, and nearly twice as long as its peduncle. The 2nd node is two-thirds wider than long, and about that much wider than the 1st, and nearly twice as wide at its posterior third as it is at the anterior margin. Both nodes reticulate, with a few longitudinal and raised lines. Basal third of the 1st abdominal segment dull and very finely reticulate, the rest of the abdomen smooth and shining.

♀. 4.4 mm. (Hitherto undescribed). Colour like that of the ♀ but darker, the apical half of the abdomen reddish-brown, the middle of the apical margins of the segments paler. Pilosity and pubescence as in the ♀. Head longitudinally striate above in the middle, strongly reticulate-rugose in front of the eyes, very finely so behind them. The frontal carinae extend back beyond the level of the anterior ocellus. Mandibles longitudinally striate and strongly punctured. Pronotum coarsely rugose in front, rather finely so at the sides. Mesonotum and scutellum strongly and longitudinally rugose. Epinotum above and at the sides coarsely and transversely rugose. The rugosities extend over the upper half of the declivity, the lower half of which is smooth and shining. Peduncle of petiole finely granulate, the nodes coarsely rugoso-punctate. Head, thorax and nodes fairly dull, the spaces between the rugae slightly shining. Abdomen dull, very finely but distinctly striate, somewhat concentrically near the basal angles, longitudinally elsewhere. The epinotal teeth are very little longer than the episternal, and not longer than they are wide at the base. The 1st node is a trifle wider than long, hardly longer than the peduncle, the anterior margin of its upper face moderately convex; 2nd node widest behind, almost hemispherical, two-thirds wider than the 1st. Wings tinged with brownish-yellow, nervures and stigma brown.

Very much like the ♀ of *continentis*, from which it may be

distinguished by its smaller size, lighter colour and stronger sculpture, especially on the nodes and epinotal spines. The latter are more divergent and shorter, hardly half as long as the interval between their bases (distinctly longer in *continentis*). The 1st node is also more convex, the sides not forming an obtuse angle with the anterior margin as in *continentis*.

Bulawayo; nesting in grassy soil, not common. (S.A.M., R.M., G.A. colls.)

T. LONGICORNE, Forel. (Plate VII, figs. 96, 96a).

Ann. Mus. Nat. Hung., vol. 5, p. 13, ♀, 1907.

♀. 4.7 m.m. Very dark reddish-brown, the head paler or more reddish, the apical two-thirds of the abdomen brownish-black, legs, antennae, mandibles, and clypeus rusty-red or dark reddish-yellow. A very short and sparse pubescence on the legs and antennae, and a few yellowish hairs on the abdomen and clypeus, otherwise glabrous. Head, thorax and nodes reticulate-rugose, very coarsely so on the head and the dorsum of the thorax. The rugae are longitudinal on the vertex and the pro-mesonotum. The clypeus has one median carina and three others or raised lines on each side of the same. Abdomen nitidulous and alutaceous, distinctly but very finely and longitudinally striate over the basal third. Legs and antennae finely reticulate and dull. Head, thorax and nodes dull, the spaces between the rugae scabrous.

Head about as long as wide, the posterior margin strongly concave, the posterior angles rounded and turned downwards. Mandibles large, subopaque, very finely striate and punctate, with three strong teeth in front, and indistinctly dentate behind. Median area of clypeus flat transversely, the anterior margin feebly arcuate; the lateral ridges of the clypeus are very prominent. Frontal carinae more widely separated from each other at their base than they are from the sides of the head, somewhat expanded above the antennal sockets, furnishing a slight depression below for the base of the scapes, and extending back beyond the level of the posterior margin of the eyes. The latter large, convex and very prominent, placed a little behind the middle of the sides. Scapes long, extending beyond the hind margin of the head by nearly one-third of their length; all the joints of the flagellum longer than wide.

Pronotum distinctly marginate in front and at the sides, the anterior angles fairly sharp. Below the raised anterior margin there is a short vertical face which joins the rather long and finely granulate

neck. The pronotum is rather flat transversely, and slopes downwards and forwards; above, it joins the mesonotum in an obtuse angle, and bears a small tubercle on each side. Thorax fairly long, not much constricted between the meso- and epinotum and not depressed between them above. Pro-mesonotal suture obsolete, meso-epinotal suture very shallow and faintly indicated. Dorsum of epinotum two and a half times longer than wide, slightly concave in its apical half, and at least twice as long as the declivity. Epinotal spines long, thin, and acute, subparallel, oblique, one-third longer than the interval between their bases. The declivity of the epinotum subvertical, smooth, distinctly margined at the sides, the margins being continued into the episternal teeth, which are short and triangular. The peduncle of the 1st segment of the petiole is as long as the node; the latter seen from above, is more or less oval, slightly longer than wide, fairly convex transversely, less so lengthwise; 2nd node subhemispherical, half as wide again as it is long, and one and a half times wider than the 1st node; the ventral surface bears a tubercle on each side. Legs rather long, femora only moderately and gradually swollen.

Bulawayo; not common. These specimens are decidedly larger than those from East Africa, on which the species was founded (3·8–4 mm.), but there is no other difference. (S.A.M., R.M., G.A. colls.)

T. GLADSTONEI, Forel.

Deutsch. Ent. Zeitschr, Beiheft, p. 219, ♂, 1913.

♂. 4·3 mm. Very dark brown; abdomen and femora, except the bases of the latter, black; tibiae, tarsi, antennae and mandibles brownish or reddish-yellow. A few yellowish, stiff hairs on the clypeus and abdomen. Legs and antennae with a very short and scanty pubescence. Head fairly strongly striato-rugose. Thorax longitudinally rugose, more coarsely so on the dorsum than on the sides, also somewhat reticulate; dorsum of epinotum strongly and transversely rugose, the declivity transversely rugulose. Nodes very strongly reticulate-rugose. Head and thorax subopaque, the spaces between the rugae shining. Abdomen smooth and shining, except the extreme base, which is somewhat dull and finely striate.

Head rectangular, excluding the mandibles very little longer than wide, the sides and posterior margin almost straight, the posterior angles rounded. Clypeus with a strong median carina, convex transversely and lengthwise, the anterior margin straight. The

lateral ridges of the clypeus are prominent, but not so much so as in *longicorne*. Frontal carinae subparallel, not raised as in *longicorne*, and not extending back as far as the middle of the vertex. Scapes extending just beyond the hind margin of the head, the 3rd-6th joints of the flagellum as wide as long, the rest longer than wide. Mandibles with three distinct teeth in front, indistinctly dentate behind, very evenly and longitudinally striate, and with a row of punctures along the masticatory margin. Thorax fairly long, twice as long as it is wide in front. Pronotum with fairly sharp anterior angles, submarginate anteriorly, convex transversely and lengthwise, joining the mesonotum in a gradual curve, not obtusely angularly as in *longicorne*. Dorsal profile of meso- and epinotum flat and horizontal. Pro-mesonotal suture obsolete, meso-epinotal suture shallow. The thorax is but little constricted at the sides at the meso-epinotal suture. Dorsum of epinotum two and a half times longer than wide, its apical half and the declivity marginate. The declivity is very oblique and about two-thirds the length of the dorsum. Epinotal spines acute, shorter than the space between their bases, directed upwards and slightly backwards, hardly divergent. The episternal teeth are large, not much shorter than the upper spines. The 1st node of petiole, seen from above, is suboval, a little narrower in front than behind, moderately convex transversely, one-fifth longer than wide, the anterior face nearly vertical; the peduncle is about two-thirds as long as the node and concave below. The 2nd node nearly one-third wider than long, higher behind than in front, not so high as, and only little wider than, the 1st node.

Shiloh, S. Rhodesia, in sandy soil. (S.A.M., R.M., G.A. colls.)

T. FRENCH, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 229, ♂, 1914.

♂. 3.2 mm. Black; mandibles and legs reddish-brown, the tarsi brownish-yellow. Pilosity fairly long, yellow and sparse, almost absent on the thorax, entirely so on the legs and antennae which are only finely pubescent. Head longitudinally rugose above and reticulate between the rugae; the sides of the head, the dorsum of the thorax, and the nodes reticulate-rugose. The sculpture is fairly strong in front of the eyes and on the dorsum of the thorax, and the spaces between the reticulations are very finely reticulate-punctate, as also the sides of the thorax. Abdomen smooth and shining, except the basal fourth which is dull and alutaceous. Head and thorax subopaque.

Head, excluding the mandibles, one-quarter longer than wide, parallel-sided, a trifle wider behind than in front, the posterior angles very rounded, the posterior margin straight. Eyes not large, placed in the middle of the sides. The clypeus has three raised longitudinal lines on the median area, and its lateral ridges are small. Mandibles triangular, closely and finely striate, subopaque, armed with 5 or 6 small teeth. The frontal carinae extend back almost to the occiput; they are slightly raised and on each side below them there is a smoother space, merely reticulate-punctate, which forms an indistinct demi-srobe for the scapes. The latter are rather thin, and extend beyond the hind margin of the head by almost the length of the eye. The 1st joint of the flagellum is as long as the three following joints taken together.

Thorax rather narrow, very slightly constricted at the meso-epinotal suture, twice as long as it is wide in front. The pronotum is convex transversely and longitudinally, and joins the mesonotum in a gentle curve. Pro-mesonotal suture obsolete, meso-epinotal very feeble. Dorsum of meso- and epinotum horizontal. Dorsum of epinotum twice as long as wide, and nearly twice as long as the oblique declivity. Epinotal spines thin, a little shorter than the interval between their bases; episternal teeth small and obtuse. The declivity is narrow and margined at the sides. The peduncle of the 1st segment of the petiole is longer or at least as long as the node. The latter is one and a third times wider than long, convex above from side to side, the anterior face vertical, the short posterior face oblique. The 2nd node is a little wider than the 1st and a little wider than long, narrower in front than behind.

A very distinct species, easily recognised by its long head, and the wide first node.

Krantz Kloof, Natal. (H. B. Marley.) (G. A. coll.)

T. LAEVITHORAX, Emery. (Plate VIII, figs. 110, 110a.)

Ann. Soc. Ent. France, vol. 63, p. 39, ♀, 1895.

♀. 2·7–3 mm. Brownish-yellow, the head and abdomen darker and more reddish-yellow. Legs and antennae pale ochreous. Head, pro-mesonotum, and abdomen shining, epinotum and nodes only slightly so. Pilosity yellow, long and suberect, more abundant on the abdomen than elsewhere. Pubescence of the legs and antennae rather long, yellow and oblique. Head above, longitudinally striate between the frontal carinae (about 5 striae), the striae connected by a few feeble transverse strands. Sides of head below the demi-srobe,

reticulate-rugose. The demi-scrobes are fairly wide but not deep, very finely reticulate-punctate. The clypeus has a strong median carina and one or two finer lines on each side. The pro-mesonotum is almost smooth and impunctate. Dorsum of epinotum very shallowly reticulate, the sides of the thorax reticulate-punctate. Nodes of the petiole very finely and superficially punctate on their posterior faces, otherwise smooth. Abdomen smooth and shining. Head a little longer than wide, the sides feebly convex, the posterior margin shallowly concave, the posterior angles rounded. The scapes are thin and long, extending beyond the hind margin of the head by a length about equal to their apical width. Flagellum long, rather thin in its basal half, the 9th and 10th joints quite half as long again as wide, the 1st joint as long as the three following joints taken together, the 2nd joint half as long again as wide, the 3rd-8th joints at least as long as wide. Mandibles triangular, finely striate, pubescent, with three acute teeth in front. Clypeus convex, the frontal area depressed and well defined. Frontal carinae long, extending back almost to the occiput. Below them there is a smooth and shallow demisrobe. Eyes fairly large and convex, placed a little in front of the middle. Thorax narrow, twice as long as it is wide across the shoulders of the pronotum; the dorsal profile slopes downwards from front to back. The pronotum has a very short declivous anterior face above the neck, and is moderately convex transversely. The dorsum of the epinotum is twice as long as it is wide at the base; epinotal spines acute, slightly divergent, as long as the interval between their bases; the declivity is oblique and shorter than the dorsum. The episternal teeth are reduced to two rounded angles. The peduncle of the 1st segment of the petiole is as long as the node; the latter, seen from the side, is cuneiform or subsquamiform, with a short and vertical anterior face and a longer posterior-dorsal face, which, seen from above, is hexagonal in outline. Second node wider than the 1st, its sides distinctly angular in the middle. Abdomen subglobose.

A very distinct species, easily recognised by the smooth pro-mesonotum, the demi-srobe, and the shape of the petiole.

Pietermaritzburg (Weitzaecker); Port Elizabeth (Dr. H. Brauns).

T. SETIGERUM, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 22, ♂, 1901.

Forel, Ann. Soc. Ent. Belg., vol. 54, p. 424, ♀, ♂, 1910.

“♂. 3.3 mm. Yellowish-red-brown, the upper surface of the head and abdomen darker, the mandibles, antennae, and legs more

yellowish-brown. The upper surface of the head bears moderately long, blunt, pilose hairs; on the under surface of the head and abdomen and on the coxae these hairs are more pointed, and the legs have only a short and decumbent pubescence. Mandibles sparsely punctured and shallowly striate, more strongly and closely striate on the basal third. Head moderately shining, rectangular, longer than wide, the angles rounded, the posterior margin slightly concave. Clypeus with a strong median carina and some longitudinal lines laterally. The frons, and vertex as far as the hind margin, with widely spaced longitudinal striae, between which are some weaker longitudinal rugae and a somewhat indistinct reticulation. Cheeks and sides of the head coarsely and longitudinally rugose and reticulate. The well-defined and long scrobe is finely reticulate, and, like the frontal carina above it, reaches nearly to the posterior margin of the head. The scapes extend to the posterior margin; 2nd-6th joints of the flagellum about equal in length and width, 7th and 8th distinctly longer than wide, the 1st and 2nd joint of the club quite one and a half times longer than wide, the last joint about three times longer than wide.

“Thorax not short; coarsely reticulate, and more or less coarsely and longitudinally rugose, the sides behind the pronotum reticulate-punctate, and with fewer longitudinal rugae, the epinotum between the spines finely but not sharply reticulate, and with or without a few fine, indistinct, and transverse rugae. The thorax above is constricted, and the profile, from the hind margin of the pronotum as far as the epinotal spines is fairly straight, only slightly depressed in front of the epinotum; the epinotal spines are not long, about as long as the interval between their bases, and are directed steeply upwards, not strongly divergent; the episternal teeth form equal-sided triangles. Petiole coarsely reticulate, 1st node slightly wider than long, and somewhat higher than the 2nd node, the anterior face vertical and convex transversely, separated by a semi-circular margin from the upper surface and the sides; the upper face merges gradually into the posterior; 2nd node somewhat wider than the 1st, transversely oval. Abdomen smooth and shining.”

“♀. 4.7 mm. Strongly and longitudinally rugose and reticulate. Dull. Petiole as in the ♂, the basal third of the 1st abdominal segment longitudinally striate. Hairs obtuse as in the ♂. Colour yellowish-brown. Deälated.”

“♂. 3.5 mm. Dirty brownish-yellow. Mandibles quadridentate. Head oval, longer than wide, striate, and reticulate, the posterior margin straight. Thorax shining, with a few striae. Epinotum unarmed, the declivity marginate. The 1st node with a feeble and

arcuate dorsal margin as in the ♂, otherwise rather round. Wings pale, hardly yellowish, nervures yellow. Hairs of the head and thorax blunt as in the ♂.

Bothaville (Dr. H. Brauns); Natal (Wroughton, Schaufuss).

Race *QUAERENS*, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 226, ♀, 1914.

“♀. 3·9 mm. Larger than the type of the species, and of a darker colour, which is blackish or dark brown-black. Legs, antennae, and mandibles brownish-yellow, the apical half of the flagellum darker. The epinotal spines are much longer, at least as long as the space between them. The meso-epinotal suture is feeble, forming no constriction. The pro-mesonotum forms a longer convexity and the thorax is also longer (in the type of the species the pronotum only is more abruptly convex). The pilosity is much scantier. Otherwise almost identical with the type.”

Bulawayo, not common; Durban (H. B. Marley), the colour somewhat paler than in the Rhodesian examples. (S.A.M., R.M., G.A. colls.)

T. SETULIFERUM, Emery. (Plate VII, figs. 101, 101a.)

Ann. Soc. Ent. France, vol. 63, p. 36, ♀, 1895.

♀. 4-4·5 mm. Castaneous red or burnt sienna, the thorax a little darker, the 1st node almost brown, legs paler and more yellowish. Exserted pilose hairs absent except on the clypeus. Head, thorax, petiole, and abdomen evenly but not very densely clothed with flat, almost scale-like, closely adpressed and silvery hairs, which lie somewhat transversely on the thorax. The hairs on the legs are also silvery, but cylindrical and oblique. The antennae are finely pubescent, the hairs simple. The silvery and flattened hairs on the body sufficiently distinguish this species from all others in our region. Head very finely and longitudinally striate, with a row of fine granules between all the striae; the cheeks, in front of the eyes, also slightly rugose. Clypeus with a strong median carina, and several finer lateral carinae or lines. Mandible closely striate. Thorax very finely and closely rugulose; the sculpture of the nodes similar but stronger, almost granulate, especially the 1st node. Basal third of the abdomen dull and finely aciculate, the rest smooth and shining. Head, thorax and nodes dull.

Head robust, as long as wide, the sides moderately convex, the posterior angles rounded, the posterior margin straight, the upper surface distinctly convex. Anterior margin of clypeus widely but not deeply emarginate in the middle. Mandibles with 6 blunt teeth. Frontal carinae short, divergent, not extending beyond the first third of the head. Scapes short, extending back very little beyond the middle third of the head. Thoracic sutures obsolete. Shoulders of the pronotum angular. Thorax much wider in front than across the epinotum, hardly constricted between the meso- and epinotum, distinctly convex lengthwise, short, hardly one-third longer than it is deep. Epinotal spines long and acute, longer than the interval between their bases, slightly divergent along their basal half, parallel along the apical half, directed obliquely upwards. Episternal teeth small and obtuse, forming almost triangular lobes. The peduncle of the 1st segment of the petiole is a little more than half the length of the node, and furnished below with a small tooth near the base; the node is truncate in front, seen from above trapezoidal, with distinct but rounded anterior and posterior lateral angles, the posterior margin nearly twice as wide as the anterior, the sides barely convex. Second node transversely oblong, two and a half times wider than long, nearly one-third wider than the 1st, the posterior margin moderately convex. Abdomen truncate at the base, with pronounced lateral angles.

♀. 7 mm. (Hitherto undescribed?) Sides of head less convex than in the ♂. Sculpture of the head stronger, mesonotum and scutellum longitudinally rugose, sides of pronotum reticulate-rugose and punctured in between the rugae, the dorsum and sides of the epinotum very closely granulate-punctate, with some more or less longitudinal rugae superimposed, the declivity coarsely and transversely striate. The epinotal spines are relatively shorter and thicker than in the ♂, about as long as their basal width, shorter than the interval between them, horizontal. The dorsum of the epinotum is very short, almost obsolete in the middle. The 1st node is shorter, quite twice as wide behind as it is long (only one-third wider than long in the ♂). The raised anterior angles of the node bear a pair of minute and nearly vertical teeth, between which the surface of the node is concave. The 2nd node is much more convex at the sides, and is nearly two and a half times wider than long. Basal two-thirds of 1st abdominal segment finely and very closely, longitudinally striate, with punctures between the striae.

Wings strongly tinged with yellow, the nervures yellow, the stigma yellowish-brown. Otherwise like the ♂.

♂. 6.8 mm. (Hitherto undescribed.) Black, flagellum and tarsi brownish-yellow, articulations of the legs reddish. The flat silvery hairs entirely absent; fairly abundantly clothed with a long and yellowish pilosity. On the head, thorax, and nodes the hairs are somewhat woolly and suberect, on the abdomen straighter and oblique. The legs have a sparse pilosity intermixed with a fine and short pubescence. Flagellum pubescent, scape with straight pilose hairs only. Head, thorax, and nodes very closely and sharply reticulate, with some more or less longitudinal rugae superimposed on the head and thorax; on the head these radiate outwards from the ocellar area. Mayrian furrows well defined, the V-shaped space between the furrows with wider reticulations than elsewhere. Scutellum less strongly rugose. The 1st node with a few longitudinal rugae on its posterior half, the 2nd node faintly striate at the sides. Head, excluding the mandibles, a little wider than long, widest across the eyes, narrowed in front and behind (but wider behind than in front), the hind margin shallowly concave, the posterior angles sharp, very convex transversely above and highest behind. Eyes convex and very prominent, occupying about one-third of the sides, and placed a little in front of the middle. Scapes extending back as far as the anterior ocellus. Mandibles closely striate, 6-dentate, the anterior tooth large and acute. Mesonotum gibbous, very convex in front, one-quarter wider than long; scutellum semi-circular, half as long as the mesonotum. Epinotum armed with a short, subacute or dentiform tubercle on each side; the dorsum as long as it is wide between the tubercles, sloping downwards and backwards and merging by a gradual curve into the vertical declivity. The latter is shorter than the dorsum and is concave lengthwise. First segment of petiole with a short and ill-defined peduncle. The node has an oblique anterior face, slightly convex lengthwise, and a shorter posterior-dorsal face; the anterior angles rounded, each one furnished with a minute tooth as in the ♀. Second node hexagonal above, the anterior margin formed of three sides, the lateral margins slightly concave and forming distinct angles at their junctions with the front and hind margins. Abdomen very finely alutaceous, shining. Head, thorax, and nodes dull. Legs long and slender. Wings as in the ♀, but the nervures are darker.

S. Rhodésia, common; Mafeking; Orange Free State and Basutoland. A harvesting and graminivorous species. The entrances to the nests are often surrounded by small accumulations of the husks of a grass seed. These heaps are smaller than those of *Messor*, and much less tidily disposed.

Var. *TRIPTOLEMUS*, n.v.

♂ 5.5 mm. This differs from the type by its larger size and also in the following characters. The sculpture is stronger, especially on the thorax and nodes. The eyes are less convex, almost flat, the posterior margin of the head is shallowly concave, and the meso-epinotal suture is shallow but fairly distinct. The epinotal spines are shorter, distinctly divergent apically, as long as the interval between their bases. The peduncle of the 1st node is relatively shorter, and the node is a little longer in proportion to the width than in the type of the species, the anterior and posterior angles are also much more acute, not rounded as in the type. The sides of the 2nd node divergent posteriorly, not subparallel as in the type of the species. The colour is darker, especially of the thorax and nodes, which are dark brown.

(R.M., G.A. colls.); type in my collection. Closely allied to var. *cucalense*, Santschi, from which it would appear to differ (judging by the description only), in the shape of the nodes and the epinotal spines.

Race *CLUNA*, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 218, ♀, 1913.

♂. 3.5–3.8 mm. Black, legs and antennae reddish-brown, mandibles reddish-yellow. The whole abdomen dull, otherwise the sculpture is like that of the species. From the latter it differs in the following characters. The dorsum of the epinotum is not convex, but shallowly concave; the spines are shorter, being barely as long as the interval between their bases. The 1st node of the petiole is shorter, and wider in front (the hind margin hardly more than half as long as the front margin), the anterior margin above more convex. The 2nd node is narrower, about one-quarter wider than the 1st, convex at the sides, not straight as in the type. The flat scale-like hairs are smaller and less abundant, more golden than silvery in colour.

This is an annectant form between *setuliferum*, i. sp., and *solidum*.

Willowmore, Cape Prov. (Dr. H. Brauns). (S.A.M., R.M., G.A. colls.)

T. SOLIDUM, Emery.

Bull. Soc. Ent. Ital., vol. 18, p. 362, ♀, ♀, 1886.

“♂. 3.5–4 mm. Piceous, mandibles, antennae and legs, except the middle part of the femora, rufescent and dull; abdomen shining,

sparsely pilose, hardly pubescent; legs pubescent. Head subquadrate, longitudinally striato-rugose, the striae divergent on the occiput, between the striae very finely rugulose. Frontal carina not extending beyond the posterior third of the head. Mandibles striate, the margins black, the masticatory margin denticulate, the apex bidentate. Antennae 12-jointed, club 3-jointed and much shorter than the rest of the flagellum. Thoracic sutures entirely obsolete. Thorax obtusely marginate in front, widest in front and thence narrowed gradually backwards. Epinotal spines robust, suberect, acute, divergent. Thorax above longitudinally rugose, the sides closely and obliquely rugose, and also very finely reticulate-rugulose; 1st segment of petiole pedunculate, the node trapezoidal, truncate behind, transversely rugulose and punctate; 2nd node transversely ovate, rugulose and punctate; apical portion of abdomen shining, the base subopaque, microscopically reticulate.

“♀. 5–5.5 mm. Similar to the ♂ in colour and sculpture; the thorax longitudinally striate; epinotal spines shorter and stouter. Wings hyaline, costal margin testaceous, stigma brown.”

South Africa.

Var. *SIGNATUM*, Emery. (Plate VII, fig. 98).

Ann. Soc. Ent. France, vol. 63, p. 35, ♀, 1895.

“♀. 4.5–5 mm. Blackish-brown; legs, antennae and mandibles castaneous brown, the middle portion of all the femora darker. This form differs from the type of the species by the presence of a well-defined, but not deep, meso-epinotal suture, and by the shape of the nodes. The 1st node, seen from above, is subconical, the apex anterior, slightly wider than long; it has a short, vertical, posterior face, and a vertical anterior face which is convex transversely. The 2nd node is not quite twice as wide as long, a little wider than the 1st; below and in front, it has on each side an obtusely triangular tubercle. The basal third of the 1st abdominal segment is very closely rugulose and dull. The epinotal spines are strongly divergent, fairly short, not longer than their basal width. The episternal lobes are shorter than the epinotal teeth. The scape does not reach the posterior fifth of the head.”

Willowmore, Cape Prov. (Dr. H. Brauns.) (S.A.M., R.M., G.A. colls.)

Race *LUGUBRE*, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 425, ♀, 1910.

“♀. 4.4–4.5 mm. Brownish-black, the mandibles, antennae and

tarsi reddish, femora brownish. The head is a little longer than wide (wider than long in the type of the species), the sides slightly compressed, and with a fairly distinct border on the sides of the occiput, which is hardly visible in the type of the species. Antennae somewhat more slender: the 9th and 10th joints of the flagellum decidedly longer than wide (as wide as long in the type, hardly longer than wide in var. *signatum*, Emery). Meso-epinotal suture obsolete. Epinotal spines a little larger. The 1st node of the petiole is rounded in front, and not truncate and marginate above as in the type and in var. *signata*; it is wider and the sides are more convex; 2nd node also wider. Otherwise similar to the type of the species. Mossamedes (Picard)."

Var. GROOTENSIS, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 118, ♀, ♂, 1913.

"♀. 6 mm. A little larger than the type. Thorax a little wider. The 1st node is entire and obtuse in front, without the emargination and the two partly effaced angles which are seen on the upper margin in front in the ♀ of the type.

"♂ (?) 4.8 mm. With the ♀ I received a ♂, which I refer to this species only with great doubt.

"It has the wings of a *Tetramorium*, but has 12 joints to the antenna, which become progressively shorter from the 2nd joint onwards. The insect is dull, densely reticulate-punctate and rugose, except the abdomen which is smooth. Erect pilosity abundant; the nodes shaped as in *solidum*. The epinotum is only bituberculate. Head wider than long, strongly narrowed in front."

Dr. Forel adds that it may belong to a distinct species, but the analogies with *solidum-grootensis* permit of doubt on that point. Or it may be a case of atavism, returning to a condition in which 12-jointed antennae were present.

Willowmore, Cape Prov. (Dr. H. Brauns); types in my collection.

T. SERICEIVENTRE, Emery, race FEMORATUM, Emery.

Ann. Mus. Civ. Genoa, vol. 9, p. 370, ♀, 1877.

(Race) Ann. Soc. Ent. France, vol. 63, p. 37, ♀, 1895.

"Differs from the type of the species in having the 1st segment of the petiole longer, less excavated at the base above, and by having the 1st abdominal segment finely striate transversely, and not longitudinally as in the type; the striation is visible only under

a strong magnification. The colour is very pale, of a reddish-yellow, the abdomen, femora and tibiae partly blackish.

“Makapan, Bechuanaland. (Simon).”

The type species has not yet been recorded from our region, it is characterised as follows:

“♂. 2.7 mm. Dull; ferruginous, abdomen brown, with the margins of the segments paler and the apex rusty. Head reticulate, finely granulate in between. Mandibles striate, the clypeus depressed in front, finely carinate in the middle, distinct from the frontal area. Frontal carinae produced backwards over three-quarters of the length of the head. The 12-jointed antennae are rather slender, the 1st joint of the flagellum is as long as the two following taken together; the club three-jointed, only slightly incrassate and distinctly shorter than the rest of the flagellum. The thorax is longitudinally rugose on the pro- and mesonotum, transversely so on the epinotum; the meso-epinotal suture deep. The epinotum is armed with two nearly horizontal spines, slightly divergent, wide at the base, fairly acute; there are two smaller episternal spines below. The petiole is finely coriaceous, the node of the 1st segment is hardly longer than wide; the 2nd segment is subglobose, a little wider behind, slightly transverse. The abdomen is dull, with a velvety, silky sheen, due to the very dense and fine striation. The whole body is sparsely clothed with pale hairs, not clavate; those on the abdomen are longer.”

T. SIMONI, Emery.

Ann. Soc. Ent. France, vol. 63, p. 35, ♀, 1895.

“♀. 4 mm. Piceous; mandibles, tarsi and articulations of the legs rufescent; dull; barely pilose and very sparsely pubescent. Head reticulate-rugose lengthwise, clypeus striato-rugose, mandibles very finely striate, meso-epinotal suture deep, pro-mesonotal suture obsolete. Pro-mesonotum strongly convex, coarsely rugoso-reticulate, the convex epinotum also, but without the coarse reticulations. Epinotum armed with two minute spines, erect, acute; episternal teeth absent. Nodes of petiole subequal, globose, hardly more finely reticulate than the epinotum. The abdomen subopaque, very finely punctured, the extreme base striolate.

“Makapan, Bechuanaland. (E. Simon).”

“Remarkable on account of the profile of the thorax and petiole, which forms a series of rounded bosses, and also by the sculpture. The latter consists of a network of coarse rugae, mostly longitudinal,

on the middle of the head and on the dorsum of the thorax. The coarsest rugae are on the pro-mesonotum, those of the head, epinotum and petiole becoming successively finer. In addition to the reticulations, there is a fundamental puncturation, which is fairly close and more or less visible, The frontal carinae are produced backwards as feeble ridges, hardly more pronounced than the neighbouring rugae, and forming no distinct scrobe."

T. JAURESI, Forel. (Plate VII, fig. 99.)

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 226, ♀, 1914.

♀. 4.3-4.7 mm. Dark brown, abdomen piceous, femora and middle portion of the scapes lighter brown; tibiae, tarsi, flagellum, base and apex of the scape, and the mandibles brownish-yellow. A few yellowish hairs on the clypeus and apex of abdomen, otherwise without pilosity. Pubescence very short and scanty, almost absent on the body, a little more noticeable on the legs and antennae. The middle of the head above, longitudinally striate. The clypeus has a median carina which is continued back to the posterior margin of the head; sides of the head finely reticulate, somewhat more coarsely so on the anterior half, which is also partly rugose. Pronotum very finely and longitudinally striato-rugulose; mesonotum smooth and shining in the middle, faintly striate at the sides; epinotum, nodes, and basal half of abdomen closely and finely reticulate and dull. The rest of the abdomen, and also a narrow median area on the 1st node, slightly shining and almost smooth.

Head about one-fifth longer than wide, the sides parallel, the posterior angles rounded, the hind margin shallowly concave. The scapes extend back almost as far as the hind margin of the head and are rather strongly curved near the base; 2nd-8th joints of the flagellum wider than long. Eyes fairly large and prominent, convex, placed in the middle of the sides. Scrobes absent. Mandibles shining, finely striate, armed with 7 small and obtuse teeth, the masticatory margin black. Pronotum truncate in front, the face so formed short, the shoulders obtuse. Thoracic sutures obsolete. Mesonotum with a slight angular enlargement on each side behind the middle. Epinotum moderately oblique, the dorsum one and a half times longer than wide, widest near the base. The declivity is almost vertical, hardly half as long as the dorsum, margined at the sides by a ridge which ends above and below in the teeth. The epinotal teeth are shorter than the interval between their bases, as long as wide at the base, divergent, directed obliquely upwards;

episternal teeth as long and as wide as the epinotal. Peduncle of the 1st segment of the petiole shorter than the node; the latter is as long as wide, convex at the sides, narrowed towards the median line above, the anterior and posterior faces almost vertical; the ventral lamella is produced at its extreme base into a small subacute tooth. The 2nd node is transversely oval, one-third wider than long, a little wider than the 1st. Abdomen narrowly truncate at the base. Femora swollen in the middle.

Park Rynie, Natal. (H. W. Marley.) (S.A.M., R.M., G.A. colls.)

T. SIMULATOR, n. sp. (Plate VII, fig. 102.)

♂. 4.7-5 mm. Head, antennae, mandibles, thorax, nodes, and femora dark castaneous, abdomen piceous, tibiae and tarsi dark yellowish-red. Head and sides of thorax nitidulous, dorsum of thorax, nodes, and abdomen shining. Antennae, legs, nodes, and abdomen with a short, scanty, and decumbent pubescence; head and thorax glabrous. Head strongly and longitudinally striate, more strongly so below the demi-scrobes than between them, the demi-scrobes finely reticulate-punctate. Clypeus with a median carina, and two or three strong lines on each side of same. Pro-mesonotum sparsely and longitudinally striate, the striae somewhat effaced towards the middle, also very shallowly and sparsely punctate, the epinotum fairly closely striato-rugose, except the space between the spines, and the declivity, which are smooth and shining. Sides of thorax fairly closely longitudinally striate, the outer sides of the epinotal spines finely rugulose. Nodes of petiole faintly rugulose and sparsely punctate, the punctures fairly strong. Abdomen sparsely, finely, and sharply punctate. Legs very shallowly and sparsely punctate. Head, excluding the mandibles, slightly longer than wide, widest in the middle, the sides feebly convex, the posterior angles slightly rounded and prominent, the posterior margin shallowly concave. Eyes large and convex, placed a little behind the middle of the sides. Mandibles large, triangular, sharply striate and also sparsely and strongly punctate, armed with 7 large teeth. Anterior margin of clypeus feebly convex. Frontal carinae subparallel, extending back almost to the occipital margin, and forming the upper boundary of the demi-scrobes. Scapes not reaching the occipital margin. Flagellum thick, the 1st joint as long as the 2nd and 3rd together, the 2nd-8th wider than long, the 9th and 10th subequal and a little longer than wide, the apical joint half as long again as wide. Shoulders of the pronotum angular. Thoracic sutures obsolete. The thorax is fairly elongate, slightly narrowed between

the pro- and mesonotum, more strongly so between the latter and the epinotum, not marginate laterally, the sides vertical, the dorsal profile horizontal. The dorsum of the epinotum is narrowest at the base and widest at the basal third; epinotal spines subparallel, directed backwards and very little upwards, acute, compressed laterally, shorter than the interval between their bases and not longer than their basal width. The declivity is vertical, hardly half as long as the dorsum, marginate at the sides, the margins continued below into the rather short and rounded episternal teeth or lobes. Peduncle of the 1st segment of the petiole thick, less than half as long as the node; the latter truncate in front, the anterior face vertical, the posterior face short, rounded above and subvertical. The node is quite one-third longer than wide, widest at its posterior third, convex transversely above, the sides feebly convex. The 2nd node is almost hemispherical, widest behind, nearly twice as wide as the 1st node. Abdomen oval, the 1st segment longer than wide, and forming almost the whole of the dorsum. All the femora swollen in the middle.

Malindi, S. Rhodesia; preying on termites.

At first sight this species bears a resemblance to *T. (Xiphomyrmex) decem*, Forel, but is easily distinguished from it by its larger size and the 12-jointed antennae.

(S.A.M., R.M., G.A. colls.); type in my collection.

T. LOBULICORNE, Santschi.

Ann. Soc. Ent. France, vol. 84, p. 504, ♀, 1916.

♀. 3.5 mm. Reddish-yellow-brown (raw umber), the abdomen reddish-brown, the anterior fourth of the head, the mandibles, antennae and legs ochreous or reddish-yellow. A sparse and short pubescence on the legs and antennae, wanting elsewhere. The pilosity consists of short, suberect, blunt and yellowish hairs, very scanty on the head and thorax, a little more abundant on the nodes and abdomen. Head, between the frontal carinae, fairly strongly and longitudinally striate, the sides of the head in front of the eyes and the cheeks longitudinally rugose and reticulate, the demiscrobes, especially on their posterior halves, closely and finely reticulate. Thorax reticulate-rugose, the rugae uneven and emphasised longitudinally, shallowly reticulate-punctate between the rugae. The apical half of the epinotum and the peduncle of the petiole closely reticulate-punctate or granulate. Nodes sparsely rugose, reticulate-punctate and dull. Abdomen shining, microscopically rugulose. Thorax subopaque, head slightly shining.

Head, excluding the mandibles, a little more than one-fifth longer than wide, the sides moderately convex, the posterior angles widely rounded, the posterior margin shallowly concave, not much narrower in front than behind. Eyes not large, placed just in front of the middle of the sides. Median area of clypeus longer than it is wide across the middle, the anterior margin narrowly excised in the middle, the median carina feeble, not stronger than the lateral striae. Frontal carinae extending back as well-defined ridges almost to the posterior margin and forming the upper boundary of the shallow demiscrobes. Scapes incrassate apically, not reaching the posterior margin of the head; 2nd-8th joints of the flagellum wider than long, the club longer than the rest of the flagellum. Mandibles finely and closely striate, feebly punctured, armed with 6 or 7 teeth, the posterior four indistinct.

Thorax constricted at the meso-epinotal suture, the latter distinct but not deep. Shoulders of pronotum rounded; pronotum convex in front. Pro-mesonotal suture feebly defined. Mesonotum marginate at the sides, the raised margins being continued along the dorsum of the epinotum as far as the base of the spines. Dorsum of epinotum widest at the base, a little longer than wide, joining the declivity in a gentle curve; the declivity fairly steep, as long as the dorsum. Epinotal spines subacute, directed obliquely upwards, shorter than the interval between their bases, as long as their basal width, and not much longer than the broad episternal teeth. The peduncle of the 1st segment of the petiole is longer or as long as the node, and is rather wide, being almost as wide as the node. The latter is vertically truncate and convex from side to side in front, a little wider than long, the upper surface slopes steeply backwards into a short posterior face. The 2nd node is subglobose, two-thirds wider than, and a little longer than the 1st node. Abdomen oblong, the 1st segment a little longer than wide and forming nearly the whole of the dorsum. Femora only slightly swollen.

♀. 3.5 mm. Black, antennae and legs reddish-brown, the articulations and tarsi paler, mandibles ferruginous. Frontal carinae wider apart than in the ♂. Pronotum transversely rugose; mesonotum and scutellum strongly and fairly densely longitudinally striate; dorsum of the epinotum short, oblique, transversely striate at the sides, reticulate-punctate in the middle, shorter than the declivity. Wings tinged with yellow, nervures pale yellow, stigma brownish-yellow. Otherwise like the ♂.

♂. 3.4 mm. Black, legs, antennae and mandibles pale brownish-

yellow. Head dull, closely reticulate-punctate, sparsely striate between the frontal carinae and the ocelli. Mesonotum very sparsely punctured, and with faint traces of a longitudinal striation on its posterior half, otherwise smooth and shining. Scutellum dull, finely longitudinally rugulose. Dorsum of the epinotum, the upper two-thirds of the declivity, and the nodes finely reticulate; the sides of the epinotum faintly striate lengthwise. Abdomen smooth and shining.

Head widest in front, nearly as long as wide, the sides and hind margin moderately convex, the posterior angles widely rounded. Eyes fairly large, placed in the anterior third of the head, and almost touching the base of the mandibles in front. The scapes extend back as far as the posterior ocelli. Frontal carinae well defined, widely divergent posteriorly. Mayrian furrows of the mesonotum distinct; mesonotum very convex and gibbous in front; scutellum semi-circular. Epinotum with two feeble lateral ridges at the apical angles of the dorsum, the latter as long as the oblique declivity. Episternal lobes large. Nodes thicker than in the ♀; the peduncle of the 1st segment not distinctly defined (as is usually the case in the ♂ ♂ of this genus), merging insensibly into the node.

Bulawayo. (S.A.M., R.M., G.A. colls.)

T. EMERYI, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 23, ♂, ♀, ♂, 1901.

“ ♂. 3.5 mm. Red-brown, the mandibles, antennae and legs paler, head and abdomen dark brown. The pilosity is most abundant on the abdomen, and consists of partly pointed, partly blunt bristly hairs, Antennae and legs with a fairly abundant and oblique pubescence. Mandibles shining, smooth, sparsely and coarsely punctured, and also very finely and shallowly striate, more densely striate on the outer side near the base, armed usually with 7 teeth, the anterior pair large, the others small and indistinct. Head rectangular, the angles rounded, a little longer than wide, very little narrower in front than behind, coarsely striate (the clypeus finely striate), shining between the striae, partly smooth and partly punctate or rugulose, the sides and back of the head coarsely reticulate. Anterior margin of clypeus straight, without any emargination. The frontal carinae, and the fairly deep demiscrobes, extend back as far as the level of the eyes, the demiscrobes not much longer than the scapes; 3rd-6th joints of the flagellum

distinctly wider than long. Eyes placed in about the middle of the sides of the head. The fairly robust thorax is narrower than the head, with obtuse and not prominent shoulders, coarsely reticulate above, finely rugulose or punctate between the meshes, and seen in profile, straight from the front to the pro-mesonotal suture, and also straight from the latter to the epinotal teeth; these two planes meet in an obtuse and rounded angle. The meso-epinotal suture is not very distinct, and the dorsum of the epinotum is only slightly depressed. The latter is longer than wide, feebly concave transversely behind; the epinotal teeth are wide, almost blunt, fairly erect and moderately divergent; episternal teeth rectangular, the sides of the thorax are in greater part finely and closely reticulate-punctate. Petiole moderately coarsely reticulate-rugulose and finely punctured; the peduncle of the 1st segment moderately long, the node a little wider than long, the 2nd segment hardly as long as, and somewhat wider than the 1st node. Abdomen smooth and shining, with scattered piligerous punctures; the base of the 1st segment more or less distinctly and longitudinally striate.

“ ♀. 4.5 mm. Very much like the ♂. The mesonotum and scutellum rugoso-striate lengthwise, the dorsum of the epinotum transversely rugose, the sides of the thorax longitudinally rugose and also closely and finely reticulate-punctate. The wings slightly infusate, with pale yellow nervures. Otherwise like the ♂.

“ ♂. 4.1–4.2 mm. Shining, brown, the mandibles, antennae and legs, particularly the last four tarsal joints, brownish-yellow. The long pilosity is scanty, more abundant on the ventral surface of the abdomen; the antennae and legs have only short, fine and oblique hairs. Head fairly coarsely and longitudinally rugoso-striate and finely reticulate, between the eyes and ocelli finely reticulate-punctate, the ocellar area transversely rugose, the back of the head unevenly rugose and finely reticulate. In the 7 specimens before me, the antennae are 13-jointed, the scape extends back as far as the anterior ocellus, the 1st joint of the flagellum is a little longer than wide, and wider than the 2nd joint, which is two and a half times, or a little more, longer than wide. The head is gradually narrowed from behind the eyes to the posterior angles, so that the latter project outwards and are almost dentiform, as in the ♂ of *T. guineense*. Thorax fairly finely and longitudinally rugose, the dorsum and declivity of the epinotum finely and closely reticulate. Wings as in the ♀. The segments of the petiole are slender, much more so than in *guineense*, the 2nd segment hardly wider than long. The abdomen in greater part smooth. Port Elizabeth.”

It is to be noted that in the ♂♂ of this species, the 2nd-5th joints of the flagellum remain separate, instead of being fused into one joint, as is the rule in the genus.

RACE CRISTULATUM, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 218, ♀, ♂, 1913.

♀. 4.3 mm. Very dark brown or black, the pro-mesonotum somewhat paler or dark reddish-brown, the antennae, tibiae and tarsi yellowish-brown, femora brown, mandibles brownish-red. This race differs from the type of the species by its larger size, and by the more angular junction of the pro- and mesonotum. The 3rd-6th joints of the flagellum are as wide as long (wider than long in the type). The head is also more coarsely reticulate between the striae, and is also a little wider behind. The meso-epinotal suture is indicated by a raised line. Otherwise like the type.

♀. 5 mm. (Hitherto undescribed.) Pronotum moderately exposed above in the middle, more exposed at the sides, the pronotal shoulders subangular. Pronotum very coarsely and transversely reticulate-rugose; mesonotum and scutellum strongly and longitudinally striate, the epinotum transversely striate, more closely and finely so on the declivity than elsewhere. Dorsum of epinotum sloping steeply downwards, slightly longer than the vertical declivity; the epinotal teeth are represented by elongate tubercles, much smaller than the teeth of the ♀. Wings slightly smoky, nervures and stigma pale yellow. Otherwise like the ♀.

♂. 4.7-5 mm. Black, antennae, legs and mandibles yellowish-brown. Head more or less lozenge-shaped, widest across the eyes, wider in front than behind, without a distinct posterior margin like that of the type, in which the head is shorter and wider behind. Mesonotum very gibbous and convex in front, overhanging the pronotum, which is thereby entirely hidden from above. Epinotum unarmed, the dorsum merging into the declivity by a gradual curve; the declivity fairly steep. The 1st node is more pointed above than in the type. Eyes very large and convex, occupying quite half of the sides of the head, and almost touching the base of the mandibles in front. As in the type of the species, the 2nd joint of the flagellum in some specimens is redivided into two or more of its component segments.

Willowmore, Cape Prov. (Dr. H. Brauns.) (S.A.M., R.M., G.A. colls.)

T. JOFFREI, Forel. (Plate VII, fig. 97.)

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 228, ♀, 1914.

♀. 3.5–3.6 mm. Piceous, legs yellowish-brown, antennae and mandibles somewhat reddish-brown. Head sometimes paler. Pilosity yellowish, fairly long, composed of thin and pointed hairs, not very abundant. Legs and antennae with a scanty yellowish pubescence, which is absent from the body. Moderately shining, strongly rugose, longitudinally so on the head, and reticulate-rugose on the thorax. The rugae on the head connected by a few transverse branches. Apical half of the dorsum and the declivity of the epinotum, the nodes and abdomen smooth and shining. Head slightly longer than wide, the sides moderately convex, the posterior margin almost straight, the posterior angles rounded, hardly narrower in front than behind. Eyes occupying about one-quarter of the sides, placed a little in front of the middle. The frontal carinae extend back as strong ridges nearly as far as the occiput, and form the upper boundary of the demisclerites, which are smooth and fairly deep. The scapes do not reach the occipital margin; 2nd–7th joints of the flagellum wider than long. Clypeus coarsely and sparsely rugose, with a strong median carina. Mandibles closely and finely striate, armed with two distinct teeth in front, and five obtuse and smaller teeth behind. Pronotum submarginate in front and at the sides, the shoulders rounded. Pro-mesonotal suture feeble, meso-epinotal suture shallow and wide. Dorsum of epinotum longer than wide, hardly wider at the base than at the apex, a little longer than the vertical declivity; the latter marginate at the sides. Epinotal spines very long, acute, strongly divergent and not very oblique, much longer than the interval between their bases and as long as the dorsum of the epinotum. Episternal teeth small. Peduncle of the 1st segment of the petiole as long as the node; the latter much higher than long, truncate in front, the anterior dorsal margin convex transversely, the dorsal face convex lengthwise and sloping downwards posteriorly; seen from above, about as wide as long and wider in front than behind. 2nd node transversely oval, three-quarters wider than long, and a little wider than the 1st. Abdomen decidedly convex above.

♀. 4.2 mm. Sides of the head behind the eyes more convex than in the ♀. Pronotum coarsely reticulate-rugose. Mesonotum and scutellum sharply striate, the striae larger and wider apart on the scutellum. Epinotum longitudinally rugose at the sides and above, near the base, fairly smooth elsewhere. Dorsum of the epinotum short, sloping from its base downwards to the longer and

vertical declivity. Epinotal spines relatively shorter than in the ♂, hardly divergent, not directed upwards as in the ♂, but nearly horizontal. Nodes wider, the anterior dorsal margin of the 1st node less convex than in the ♂. Wings tinged with dirty yellow, nervures and stigma pale yellow.

Durban; nesting in a rotten and very moist tree stump. (S.A.M., R.M., G.A. colls.)

Var. ALGOA, n. v.

♂. 3.5 mm. Differing from the type in the following characters. The colour is darker, on the body quite black. The demiscrobes are wider and deeper and more distinctly defined externally. The sculpture of the thorax is weaker, and almost effaced on the middle of the mesonotum. Pro-mesonotal suture obsolete, meso-epinotal shallower and narrower. Epinotal spines shorter, hardly as long as the dorsum of the epinotum, much more oblique and less divergent than in the type. The dorsal (posterior-dorsal) face of the 1st node is longer, a little longer than wide, and the 2nd node is longer and more convex above.

♀. Like the ♀ of the type but a little smaller. The sculpture of the thorax is weaker, the anterior third of the mesonotum smooth and shining; the epinotal spines nearly horizontal.

The resemblance of this variety to *T. Grassi* and its var. *laevigatum*, Mayr, is even greater than in the type of the species. *Joffrei* and *Grassi* are evidently very closely allied.

Port Elizabeth. (Dr. H. Brauns.) (S.A.M., R.M., G.A. colls.); type in my collection.

T. GRASSI, Emery. (Plate VII, fig. 105.)

Ann. Soc. Ent. France, vol. 63, p. 37, ♂, ♀ (?), 1895.

Mayr, Ann. K.K.N.H. Mus. Wien, vol. 16, p. 25, ♀, 1901.

♂. 2.7-3 mm. Brown, legs, antennae, mandibles and petiole brownish-yellow. Pilosity yellow, very sparse; pubescence short, oblique, very sparse and present only on the legs and antennae. Head fairly strongly and longitudinally striate or striato-rugose, the striae rather wide apart, the sides of the head reticulate-rugose. Thorax longitudinally rugoso-reticulate, the rugae somewhat discontinuous, the median portion of the mesonotum smooth. Head and thorax moderately shining; declivity of epinotum, petiole and abdomen smooth and shining.

Head subrectangular, about as long as wide, a little narrower in

front than behind, the sides moderately convex, the hind margin straight. Distinct demiscrobes present; the frontal carinae extend backwards as far as the posterior margin of the head, 2nd-8th joints of the flagellum wider than long. Clypeus with a strong median carina, and two weaker and broken lines on each side of it. Mandibles finely striate, armed with three distinct teeth in front, feebly denticulate behind. Sides of pro-mesonotum indistinctly marginate, the shoulders of the pronotum obtusely angular. Thoracic sutures obsolete. Dorsum of epinotum oblique, a little longer than wide, as long as, or a little longer than the declivity. The epinotal spines are longer than the interval between their bases, but shorter than the dorsum of the epinotum, divergent, acute and fairly oblique. Petiole similar to that of *Joffrei*, but the dorsal face of the 1st node is fairly distinct from the short posterior face, not forming a continuous curve as in *Joffrei*. The femora are but slightly swollen in the middle.

♀. 3.5 mm. The colour of the thorax is rather darker than in the ♂. Pronotum reticulate-rugose, the sides and posterior third of the mesonotum longitudinally striate, the anterior two-thirds smooth. The dorsum of the epinotum is almost obsolete, being in very nearly the same plane as the declivity. The epinotal spines are parallel and nearly horizontal. Deälated. Otherwise like the ♂.

Table Mountain; making small nests under stones in the pine woods. (S.A.M., R.M., G.A. colls.)

Var. *LAEVIGATUM*, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 25, ♀, 1901.

"The ♀ differs from that of the type species in having the thorax smooth, from the anterior margin of the pronotum as far as the epinotal spines." Port Elizabeth. (Dr. H. Brauns.)

I possess some specimens from this locality, collected by Dr. Brauns, which appear to belong to this variety. The dorsum of the thorax is in greater part smooth, but there are distinct, though fine, short rugae near the lateral and anterior margins of the pro-mesonotum, and on the basal half of the epinotum. The size is a little larger, 3.4 mm.

Var. *SIMULANS*, Santschi.

Göteborgs K. Vetens. och Vitterh. Handl. XV, 2, p. 24, ♀, 1914.

"♀. Brownish-black, abdomen black. Mandibles, antennae, tarsi and peduncle of the petiole rusty-red, the middle of the femora

and tibiae brownish. Larger than the type, 3·3–3·5 mm., and still more resembling *Xiphomyrmex Weitzaeckeri*, Em., the colour and pubescence being the same. The sculpture differs from that of *Weitzaeckeri* but little, the rugae not being effaced on the thorax. The epinotal spines are nearly twice as long as the interval between their bases. The 1st node forms a scale, as abrupt in front as behind, a little wider than thick. Otherwise like the type of *Grassi*.
 Richmond, Natal. (Traegaardh.)

T. GUINEENSE, Fab.

Ent. Syst. II, p. 357, ♂, 1793.

Nylander (*Myrmica bicarianata*), Act. Soc. Fenn. II, 3, p. 1061,
 ♀, 1846.

Mayr (*Myrmica Kollari*), Verh. Zool. Bot. Ges. Wien, III, p. 283,
 ♂ 1853.

This species, whose original home was probably West Africa, has spread over a large part of the Tropics in both hemispheres, and has also been introduced into hot-houses in temperate countries. I have no records of it having been taken in our region, but as it is almost certain to be found sooner or later, I append a description of the ♀. It is smaller than the various races and varieties which are described further on.

♀. 3·5 mm. Head, thorax, and nodes bright reddish-yellow, abdomen brownish-black, legs and antennae ochreous yellow, the base of the 1st, and the apical margins of the remaining abdominal segments yellowish. The pilosity is fairly abundant on the body, and consists of long, erect, blunt, and rather thick hairs, which are somewhat shorter and oblique on the head. Antennae and legs with a rather long, oblique, and yellowish pubescence, which is absent from the body. Vertex of the head between the demi-scrobes, thorax, and nodes strongly reticulate-rugose. The rugae, near the middle line of the head, are emphasised longitudinally, and the meshes there and on the pronotum are very wide, the spaces between the network shining and fairly smooth. In some specimens the reticulations become closer and less sharp on the meso- and epinotum, and even more so on the 2nd node. The sides of the head and thorax are more closely reticulate than elsewhere. Abdomen smooth and shining.

Head, excluding the mandibles, nearly one-sixth longer than wide, hardly narrower in front than behind, a little more convex behind the eyes than in front of them, the hind margin nearly straight. Eyes placed in the middle of the sides, convex, and prominent. Clypeus

with a median carina, and a lateral one on each side. Scape not reaching the posterior margin, somewhat curved near the base, 2nd-8th joints of the flagellum wider than long, 2nd-5th twice as wide as long. Mandibles very finely striate, dull, armed with 7 teeth, the posterior four small. Pro-mesonotal suture obsolete, meso-epinotal suture indistinct above. Shoulders of the pronotum angular. Dorsum of the thorax marginate in front and at the sides, the margin uneven, being formed by the outermost rugae. The rugae of the head, thorax, and 1st node are brownish, darker than the ground colour. Thorax narrowed at the meso-epinotal suture, widening immediately behind the same at the base of the epinotum and thence narrowed again towards the spines. Seen in profile, the dorsum of the thorax is fairly straight except in front, where the pronotum joins the mesonotum in an obtuse and indistinct angle. The dorsum of the epinotum is a little longer than wide; the declivity is vertical and striate on its upper half. The epinotal spines are acute, moderately divergent, directed obliquely upwards, longer than the interval between their bases and longer than their basal width. Episternal teeth acute, less than half as long as the epinotal. Peduncle of the 1st segment of the petiole shorter than the node; the latter, seen from above, hexagonal, the anterior lateral sides longest, wider behind than in front, the dorsal surface moderately convex; seen from the side, the anterior face is shorter than the posterior; the ventral lamella is produced into a minute tooth at the base of the peduncle. Second node transversely ovate or subglobose, one-quarter wider than long, and wider than the 1st node. Abdomen oval. Femora moderately swollen.

Var. *ERECTUM*, Emery.

Ann. Soc. Ent. France, vol. 63, p. 37, ♀, 1895.

"Differs from the type by being more robust and a little larger. The petiole is a little thicker, the nodes rounder. The epinotal spines fairly short but nearly erect, their posterior margin, in profile, being the continuation of the declivity, and nearly perpendicular to the dorsum of the thorax. The base of the 1st abdominal segment is more distinctly striate than in the type. Vrijburg, Bechuanaland. (Simon)."

Var. *PHASIAS*, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 226, ♀, 1914.

♂. 3.6 mm. Yellow, the abdomen and nodes, clypeus and antennae more reddish-yellow. The sculpture is a little more

superficial than in the type, from which it differs, like the race *striatum*, in the much more angular junction of the pro- and mesonotum. The 1st node is also narrower above, and the base of the 1st abdominal segment more distinctly striate. The frontal carinae are more prominent than in the type.

Durban. (C. B. Cooper.) (R.M., G.A. colls.)

Race STRIATUM, Stitz.

Mitth. Zool. Mus. Berlin, vol. 5, p. 144, ♀, 1910.

♀. 4.6 mm. Head, antennae, and nodes yellowish-red, thorax reddish-yellow, abdomen and legs bright ochreous yellow, the abdomen sometimes more or less brownish-yellow. Differs from the type by the stronger sculpture. The frontal carinae are decidedly stronger, forming prominent ridges bordering the demiscrobes. The junction of the pro- and mesonotum, seen in profile, is much more angular, even more so than in var. *Phasias*. The pro-mesonotal suture is indicated by a dark transverse ridge. First node of the petiole more abruptly truncate in front, the anterior face as long as the posterior. The sculpture of the 2nd node as strong as that of the 1st (distinctly weaker in the type and var. *Phasias*). The basal third of the 1st abdominal segment finely and longitudinally striate, and rather dull.

♀. 5 mm. Mesonotum and scutellum longitudinally reticulate-rugose; the posterior two-thirds of the mesonotum flat. Pronotum not much exposed above, the shoulders much less angular than in the ♀. Dorsum of epinotum moderately oblique, as long as it is wide between the spines. Wings hyaline, nervures and stigma pale yellow. Otherwise like the ♀.

♂. 4.2 mm. Head yellowish-brown, thorax and abdomen brownish-yellow, the parapsidal sutures of the mesonotum and the margins of the scutellum darker, legs, antennae, and mandibles ochreous. Pilosity and pubescence much sparser than in the ♀. Head and nodes subopaque, thorax and abdomen nitidulous. Head finely reticulate, with a few fine longitudinal striae on the vertex in front of the ocelli, and also some oblique striae behind them; between the eyes and antennal sockets transversely striate. Thorax and nodes longitudinally striate, very finely and fairly closely so on the mesonotum and scutellum and 2nd node, more coarsely so on the epinotum and 1st node; the latter are also partly reticulate, and the epinotum is also closely and shallowly punctate between the striae. Head narrower behind the eyes than in front, the posterior margin straight

and reflected to form a collar, with prominent lateral angles. Eyes large, occupying nearly the whole of the anterior half of the sides; ocelli large and prominent. Frontal carinae extend back almost as far as the anterior ocellus. Mandibles small, dentate. Scape not extending back as far as the anterior ocellus, twice as thick as the 2nd joint of the flagellum; the latter is longer than the scape and the 1st joint taken together. Pronotum slightly exposed above at the shoulders. Mayrian furrows well defined. Mesonotum separated from the scutellum by a wide and clathrate groove. The dorsum of the epinotum not distinctly delimited from the declivity, the profile of the epinotum forming a continuous curve from base to apex. First node of petiole somewhat pyriform, the ventral lamella produced into a rather large tooth near the base. Second node at least half as wide again as the 1st, wider than long, only slightly convex transversely. Wings as in the ♀.

S. Rhodesia. Common in grassy soil. The entrance to the nest consists of one or more holes, which are rarely surrounded by mounds of earth. (S.A.M., R.M., G.A. colls.)

T. BACCHUS, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 426, ♂, 1910.

“ ♂. 3.7 mm. Mandibles smooth, shining, with small scattered punctures, armed with 7 teeth, the posterior ones indistinct. Clypeus without a carina, the anterior border emarginate in the middle. Head as in *guineense*, but much wider, hardly longer than wide, distinctly narrowed in front. Club of the antenna more slender, composed of almost four joints. Thorax, especially the pronotum, decidedly wider than in *guineense*, and much more convex lengthwise, submarginate; meso-epinotal suture a little stronger. Epinotal teeth more vertical, a little shorter, wider at the base, not curved at the extremity; episternal teeth a little shorter. Nodes of the petiole thicker, wider and more rounded than in *guineense*. The 1st node is not truncate in front, but rounded, and with its peduncle forms a single concave curve in profile; it is also rounded and much less truncate behind. Sculpture as in *guineense*, but closer, a little finer and less shining; base of the abdomen longitudinally striate. Pilosity as in *guineense*. Brownish-red, legs paler; abdomen a little darker, more yellowish-brown; darker than *guineense* excepting the abdomen, which is paler.

“ Natal (Haviland). Closely allied to *guineense*, but nevertheless

clearly distinct; larger, more robust, the mandibles smooth, the spines differently shaped, as also the 1st node, etc."

T. CAPENSE, MAYR.

Reise der Novara, Zool. Formicidae, p. 89, ♀, 1865.

Emery, Ann. Soc. Ent. France, vol. 63, p. 36, ♀, ♂, 1895.

"♀. 3.5 mm. This species bears a great resemblance to *guineense*, but nevertheless is easily distinguished from it. Yellowish-red, the legs more yellow, the abdomen faintly brownish, the masticatory margin of the mandibles, and the eyes black. The pilosity is very sparse on the body, whereas it is much more plentiful in *guineense*. The feebly shining mandibles are sharply and longitudinally striate, with single punctures between the striae (in *guineense* the mandibles are shining, very shallowly striate, and not over the whole surface). The clypeus has several carinae or longitudinal rugae, but the median one is strong and is continued on to the frontal area; the latter is distinctly delimited from the clypeus, which is not the case in *guineense*, and the frontal area itself is more distinct than in that species. Frons and vertex as in *guineense*. The sides of the head are coarsely reticulate also, but the rugae are emphasised longitudinally, which is not the case in *guineense*. The flagellum is somewhat longer and more slender. The thorax is short and fairly high, as in *T. caespitum*, whereas in *guineense* it is longer and lower. The thorax above is finely coriaceous and reticulate-rugose (or finely reticulate punctate), with fewer longitudinal striae, which disappear on the epinotum. . . . The epinotal spines are wider at the base than in *guineense*, the space between the spines smooth and shining, the sides of the thorax reticulate-punctate. The 1st node of the petiole is wider than long (in *guineense* as long as wide), both nodes are coarsely and shallowly rugose (coarsely reticulate in *guineense*). The abdomen shining, exceedingly finely coriaceous at the base."

"♀. Petiole wider than in the ♀, the 1st node truncate in front, with the anterior margin straight, ending in an angle on each side; the wings are hyaline, the stigma and nervures brownish-yellow. ♂. Testaceous. The head striate, the scutellum, epinotum, and petiole very finely punctured and dull, the rest shining; mandibles shining, 5-dentate; . . . in profile, the 1st segment of the petiole forms a rounded rectangle, the 2nd is hardly wider than long, excluding the articular portion."

Capetown. (S.A.M. coll.)

Var. BRAUNSI, Forel.

Ann. Soc. Ent. Belg., vol. 57. p. 119, ♀, 1913.

Deutsch. Ent. Zeitschr. (Beiheft), p. 220, 1913.

“♀. 3.5–4 mm. Differs from the type by its larger eyes, longer epinotal spines, and the hind margin of the head, which is more concave. Otherwise like the type.”

Willowmore, Cape Prov. (Dr. H. Brauns); East London (ex S.A.M. coll.) (S.A.M., R.M., G.A. colls.)

It is misleading to compare this species with *guineense*, as its author has done. This species and its var. *Braunsi*, have a very different facies. The total absence of wide and coarse reticulations on the head and thorax (the latter dull), and the form of the pro- and mesonotum, which in profile form only a very slight convexity, suffice to remove it fairly far from *guineense*.

T. POPOVICI, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 230, ♀, 1914.

♀. 3.7 mm. Rather dark yellowish-red, the 1st abdominal segment more brownish, legs yellow. Pilosity yellowish and very scanty, the hairs on the petiole and abdomen obtuse. Legs without pilose hairs, merely sparsely pubescent. Head longitudinally rugoso-striate, the striae not very strong; the sides of the head are reticulate-rugose, the spaces between the reticulations finely reticulate-punctate. Dorsum of thorax finely and more or less longitudinally rugulose. Sides of thorax longitudinally rugose, partly reticulate. Head and thorax slightly shining. Nodes dull, shallowly and irregularly reticulate. Abdomen smooth and shining.

Head a little wider behind than in front, a trifle longer than wide, the sides and posterior margin nearly straight, the posterior angles widely rounded. Eyes rather small, placed in the middle of the sides. Clypeus very narrowly excised in the middle of the anterior margin, longitudinally striate, the median carina feeble. Frontal carinae well defined, divergent in front, nearly parallel along their posterior half, extending back almost to the occipital margin, hardly forming a demiscrobo. The scape falls short of the occipital margin by twice the diameter of the eye; 2nd–7th joints of the flagellum wider than long. Mandibles closely and longitudinally striate, armed with 7 teeth.

Thorax rather short, the shoulders of the pronotum rounded. Pro-mesonotal suture absent, meso-epinotal suture shallow, the lateral

profile slightly constricted between the meso- and epinotum. A fine transverse ridge separates the pronotum from the mesonotum. From the ridge forwards, the pronotum slopes downwards to the neck (not vertically so, as described by Forel). Dorsum of the epinotum one and a half times longer than wide, widest at the basal third, longer than the declivity. Epinotal spines acute, longer than their basal width and a little longer than the space between their bases, slightly divergent, directed very obliquely upwards. Declivity subvertical, margined at the sides, the episternal teeth small and triangular. Peduncle of the petiole a little shorter than its node. The latter truncate in front, the anterior face shorter than the oblique posterior face. The dorsal and posterior faces, taken together, longer than wide, the anterior border above margined with a dark line. Second node shorter than the 1st, nearly twice as wide as long, wider than the 1st, transversely oval. Femora only slightly swollen.

♀. 5.2 mm. (Hitherto undescribed.) Colour like that of the ♂, but a little darker; tegulae, metanotum, and posterior margin of the scutellum almost black. Sculpture of the head stronger than in the ♂; the frontal carinae more pronounced, mesonotum and scutellum shining, more so than in the ♂, closely and finely longitudinally striate. Epinotum rugulose above, and also partly reticulate-rugose at the sides. Epinotal spines much more robust than in the ♂, acute, about as long as their basal width. Nodes much shorter and wider than in the ♂; the dorsal face of the 1st node more sharply delimited from the oblique posterior face, and nearly three times wider than long; the 2nd node has the anterior face almost vertical and the sides subangular in the middle. Deälated. Otherwise like the ♂.

Table Mountain, 1500 ft. Under stones in the Pine woods. (S.A.M., R.M., G.A. colls.)

T. GRANDINODE, Santschi.

Ann. Soc. Ent. Belg., vol. 57, p. 308, ♂, 1913.

“ ♂. 4.5 mm. Black; mandibles, antennae, tarsi, peduncle of 1st node of the petiole, and the apex of the abdomen rusty red. Middle of the femora brownish. Sometimes a part of the 2nd node and the base of the abdomen very dark red. Shining. Strongly and regularly striate, the intervals between the striae smooth, or here and there, finely reticulate. Striae on the head longitudinal, those above diverging from the occiput and anastomosing behind the eyes with the striae from below. Transversely striate on the pronotum, longitudinally so on the rest of the thorax, the striae forming concentric curves on the pronotum. Declivity of epinotum smooth, with

a few transverse striae between the spines. The two nodes transversely striate above, smooth below. There are some long reddish hairs round the mouth and below it, and on the coxae and the ventral surface of the abdomen. Tarsi and antennae furnished with shorter hairs, which are fairly oblique and abundant. A very fine, short, and very sparse pubescence present all over, but more distinct on the abdomen. Head quadrate, angles rounded, sides nearly straight, a little narrower in front, the vertex fairly gibbous. Frontal carinae very divergent, reaching back as far as the middle of the head, and forming only a short demicrobe for the basal third of the scape. Eyes one-fourth the length of the sides of the head, placed in the middle, the margin angular below. Mandibles smooth, with a few striae near their masticatory margin, feebly and sparsely punctate, armed with 6 rather short teeth. Clypeus only slightly convex, the anterior margin nearly straight. The scape extends back nearly to the vertex, 2nd-8th joints of the flagellum nearly as long as wide. Anterior portion of the pronotum flat, transversely margined, the shoulders forming prominent and acute angles. The rest of the pronotum forms an even convexity with the mesonotum (segment of a sphere). Meso-epinotal suture feebly indicated. Dorsum of the epinotum horizontal in profile, convex transversely, not margined. Spines stout, as long as two-thirds of the dorsum of the epinotum, fairly high and divergent. Declivity concave, with a triangular tubercle in the lower part, and a lamelliform expansion on each side of the articulation with the petiole. First node squamiform, as wide as the middle of the thorax, much wider than high, trapezoidal, the upper margin narrower, the lateral margins compressed, oblique below; the posterior face convex, especially in its upper half, which appears horizontal in profile; the anterior face slightly concave from above to below, and convex from side to side. The peduncle is as long as the scale is high, and bears a very small tooth below at its base. Second node wider than the 1st, lower, three and a half times wider than long, convex above, the sides sharply marginate, trenchant, and arcuate, transverse in front and slightly convex behind. Below it bears a fairly thick and transverse appendage. Abdomen a little more than one-quarter wider than the 2nd node, truncate at the base."

Cape of Good Hope.

Var. *HOPENSIS*, Forel. (Plate VII, figs. 103, 103*a*, 103*b*.)

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 223, ♀, ♀, 1914.

"♀. 4.9 mm. Differs from the type of the species by the

2nd node of the petiole, which is narrower and lacks the flattened and translucent upturned edge at the sides. The spines are also a little shorter." Abdomen smooth and shining, and in some examples also very faintly rugulose over the 1st segment.

♀. 6 mm. Somewhat lighter than the ♂, more reddish-brown, especially the thorax, nodes, and legs. Pronotal angle only just visible from above, prominent but not acutely angular as in the ♂. The mesonotum is longitudinally striate, the scutellum and epinotum transversely striate, the striae on the former more or less concentric. The head is as wide as the thorax, not considerably wider as in the case of the ♂. The 1st segment of the petiole differs from that of the ♂ in not having a dorsal face. It is very compressed from front to back, almost laminate throughout, so that the posterior surface forms one continuous and oblique face, from the dorsal edge above to the ventral edge below. The 2nd node, four times wider than long, is on the contrary less rounded above, so that the anterior and posterior faces meet above in a fairly acute angle; the dorsal edge formed by the junction of the two faces, is slightly sinuate, curving forwards at the sides. Epinotal spines shorter and less acute than in the ♂, and only very slightly divergent, very little longer than their basal width, and hardly longer than half the interval between their bases. Wings tinged with yellow, nervures and stigma pale yellow.

Hopetown, Orange River.

The description of the petiole in the type of the species is not very clear, and requires amendment.

The 1st node is more or less squamiform, but much thicker above than below, so that there is a distinct, but short, dorsal face. This meets the almost vertical posterior face at right angles. The dorsal face becomes narrower, *i.e.* thinner, laterally and is curved downwards and is continuous with the sides of the node or squame. The sides end below in somewhat projecting and obtuse angles, which are turned a little bit forwards. The 2nd node, which is fairly convex transversely, has the posterior third of its sides strongly flattened dorso-ventrally (laminate), so as to form a trenchant edge at its lateral margins.

(S.A.M., G.A. colls.)

T. SQUAMINODE, Santschi, Race do, Forel.

Ann. Soc. Ent. France, vol. 79, p. 356, 1910.

(Race) Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 224, ♂, ♀, ♂, 1914.

♂. 3-3.2 mm. Light reddish-brown, the mandibles and antennae paler; nodes dark brown, abdomen black, legs pale yellow. Pilosity

scanty, composed of pale, erect, and thick hairs, absent from the legs and antennae, which have only a short, decumbent and yellowish pubescence. Body without pubescence.

Head longitudinally and strongly rugose between the frontal carinae, the rugae connected by a few transverse branches, the sides of the head more distinctly reticulate, the spaces between the rugae fairly smooth and shining; scrobes finely reticulate-punctate. Clypeus tricarinate, the median carina the strongest. Thorax very coarsely reticulate-rugose, the meshes wide, and the spaces between the reticulations shining. The sides of the pronotum smooth and shining, the sides of the meso- and epinotum more or less longitudinally rugose, but finer than on the dorsum. Between the epinotal spines there are a few transverse striae; the declivity, nodes, and abdomen smooth and shining. Head hardly longer than wide, a little narrower in front than behind, the posterior margin straight, the sides almost so, the posterior angles moderately rounded. Eyes moderately convex and large, placed in the middle of the sides. Frontal carinae prolonged back almost to the occipital margin, and forming below distinct demiscrobes for the scapes. The latter as long as the demiscrobes, the 2nd-8th joints of the flagellum much wider than long. Mandibles shining, sparsely and finely punctured, 6-dentate, the posterior 4 teeth small and indistinct. Thorax marginate, moderately constricted between the pro- and mesonotum, strongly so between the meso- and epinotum. Pro-mesonotal suture nearly obsolete above, meso-epinotal broad and shallow. Shoulders of pronotum subangular. Pronotum nearly as wide behind as in front, sloping fairly steeply downwards. Dorsum of epinotum about as long as wide, widened angularly near the base; epinotal teeth divergent, directed obliquely upwards, acute, as long as, or a little longer than, the interval between their bases; the declivity vertical, the episternal teeth small, acute, and triangular. First node of petiole squamiform, inclined slightly forwards, the lateral and dorsal edges trenchant, the anterior face convex transversely, the posterior face feebly convex. The peduncle is nearly as long as the node. Second node twice as wide as long, wider than the 1st, the anterior and posterior faces steep and convex transversely, and meeting angularly at the sides. Abdomen smooth and shining, convex, the 1st segment forming almost the whole of the dorsum. All the femora moderately swollen.

♀. 3.6 mm. Like the ♂, but the thorax somewhat paler, more reddish. Mesonotum and scutellum fairly closely and longitudinally striate. Pronotum exposed above only at the shoulders. Dorsum of

epinotum wider than long, sloping steeply downwards to the declivity. Epinotal teeth horizontal. The dorsal edge of the 1st node is very shallowly concave. The 2nd node less angular at the sides than in the ♀. Wings tinged with yellow. Otherwise like the ♀.

♂. 3.5 mm. Dark brown, the head black, the petiole paler, the legs, antennae and mandibles pale yellow. Head dull, very closely and finely reticulate-punctate, with a few striae radiating outwards from the ocellar region. The sides of the thorax and epinotum finely and longitudinally striate and also reticulate-punctate, nitidulous, the rest of the body smooth and shining. Head much wider in front than behind, the posterior margin and sides convex. Scapes hardly reaching back as far as the anterior ocellus. Mandibles small, with 3 or 4 teeth. Dorsum of epinotum oblique, merging gradually into the declivity, and twice as long as the latter. First node of petiole not squamiform, about as wide as thick, seen from the side subcuneiform, hardly wider than high. Second node wider than the first, widest in front, one and a half times wider than long, the anterior margin moderately convex.

Bulawayo, nesting in sandy soil.

This differs from the type species, which has not yet been recorded from our region, by the wider 2nd node, the more abruptly convex pronotum, and the coarser sculpture.

(S.A.M., R.M., G.A. colls.)

Var. FLAVICEPS, n. v.

♀. 2.8 mm. Head, thorax, and nodes yellow, the head also slightly brownish, abdomen dark brown, legs pale yellow. Apart from the smaller size and the colour, this variety differs from the type of the species as follows.

The lateral constriction of the thorax between the pro- and mesonotum is much less, almost obsolete. The 2nd node of the petiole has the sides straight, it is more rounded above, the anterior and posterior faces meeting much less angularly than in the type. The sculpture is also weaker, especially on the head, which is longitudinally striate rather than rugose. The pilosity is also more abundant on the abdomen. Otherwise like the type of the species.

Matopo Hills, S. Rhodesia. (S.A.M., R.M., G.A. colls.), type in my collection.

Var. MUS, n. v.

♀. 2.8 mm. Very similar to var. *flaviceps*, but differing from it in the darker colour of the head and thorax, which is brownish-yellow,

and in the sculpture. This is much weaker, and the striation of the head between the frontal carinae is sparser; the spaces between the striae on the head and thorax are very finely reticulate and duller than in the type species or *flaviceps*. The 1st node of the petiole is a little thicker, and the dorsal face of the 2nd node much more convex lengthwise. The pilosity is shorter and scantier, especially on the abdomen, which is microscopically alutaceous.

Hillside, Bulawayo; forming fairly populous nests in the ground, and occasionally in the mounds of *Platythyrea lamellosa-rhodesiana*. (S.A.M., R.M., G.A. colls.), type in my collection.

T. TITUS, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 427, ♀, 1910.

“ ♀. 3 mm. Mandibles smooth, shining, finely and very sparsely punctured, with two teeth in front, and a denticulate margin behind. Clypeus not carinate, the anterior margin narrowly excised in the middle, behind which is an impressed line. Head quadrate, slightly narrowed in front, as wide as long, hardly concave behind. Eyes placed in the middle of the sides. The frontal carinae and the scapes extend back as far as the posterior 8th of the head. The scape lies in a demisrobe which is decidedly shallow, entirely smooth, and not delimited externally except by the sculpture. The club of the antenna is about as long as the rest of the flagellum, of which the 2nd-8th joints are wider than long. Pro-mesonotum without a suture, convex in all directions, feebly marginate, but fairly clearly marginate in front and laterally; seen from above, it is shaped like a trapeze, narrowed behind, slightly longer than it is wide in front. Meso-epinotal suture deep. Dorsum of epinotum strongly convex in its anterior half, distinctly longer than wide, excavated between and in front of the spines, marginate at the sides. Declivity marginate by a downward extension of the edge of the spines. The latter wide at the base, pointed, as long as the interval between them. Episternal teeth small and triangular. The 1st node forms a thick scale, biconvex and narrow, hardly thicker, but much narrower, than that of *T. (Xiphomyrmex) Wetzaeckeri*, with a small and obtuse summit; the peduncle as long as the base of the scale. Second node transversely oval, nearly twice as wide as the 1st. Head longitudinally striato-rugose, shining, reticulate-rugose at the sides. Clypeus and thorax very shining, with a feeble and not very close, longitudinal striation. Dorsum of the pro-mesonotum partly smooth. The rest of the body smooth and shining. Pilosity fine, yellowish, pointed, fairly short, sparse on the body and absent from

the tibiae and scapes. Pubescence very sparse, more apparent on the legs and antennae. Brownish rusty red; head and abdomen brown.

“Natal (Wroughton).”

T. SUBCOECUM, Forel, var. INSCIA, Forel.

Rev. d'Ent., vol. 26, p. 135, ♀, 1908.

(Variety) Deutsch. Ent. Zeitschr., Beiheft, p. 218, ♀. 1913.

♀. 3 mm. Ochreous, the head slightly reddish-yellow, the thorax dirty yellow, the legs pale yellow. The whole body shining, except the sides of the head and thorax which are somewhat dull. Head faintly and sparsely longitudinally striate above, more strongly and more densely at the sides. Thorax very finely and faintly striate at the sides and in front of the pronotum, almost smooth elsewhere. Nodes and abdomen smooth. Pilosity yellow, moderately long, sparse and obtuse, absent from the scapes and legs, which have only a very fine decumbent pubescence.

Head, excluding the mandibles, barely longer than wide, widest across the eyes, and wider in front of them than behind; the sides fairly convex, the posterior angles slightly rounded, the posterior margin feebly concave in the middle. Eyes very small, composed of a single facet, placed in the middle of the sides. Clypeus with a feeble median carina which does not reach the anterior margin; the latter narrowly emarginate in the middle. Mandibles shining, sparsely punctured, feebly striate near the apex, armed with 6 very obtuse teeth. Frontal carinae short, strongly divergent behind. The frontal sulcus narrow, extending back almost to the occiput. The scapes are curved near the base, and reach back as far as the posterior sixth of the head; 2nd-8th joints of the flagellum wider than long. Pro-mesonotal suture obsolete, meso-epinotal, shallow. Thorax marginate at the sides and in front, strongly narrowed towards the meso-epinotal suture. The pro-mesonotum is as long as it is wide in front, and nearly three times wider in front than at the meso-epinotal suture. Dorsum of epinotum almost twice as long as wide, longer than the declivity. Epinotal spines acute, not much longer than they are wide at the base, shorter than the interval between them, moderately divergent and oblique. Episternal teeth hardly shorter than the epinotal. Peduncle of the petiole as long as its node. The latter is as long as wide, narrower in front than behind. Seen from the side, it has a dorsal face which is feebly convex lengthwise, and a vertical anterior face which is shorter than the subvertical posterior face. Second node nearly one-third wider than long, its anterior margin

very convex, subglobose, wider than the 1st node. Abdomen truncate at the base, the lateral angles rounded.

Bulawayo: Matopo Hills, S.R. (S.A.M., R.M., G.A. coll.)

T. TRAEGAORDHI, Santschi.

Göteborgs Kungl. Vetens. och Vitterh. Handl. XV, 2, p. 23, ♂, ♀, 1914.

♂. 2.5–2.7 mm. Pale yellow. Very similar to var. *inscia* of *subcoecum*, and differing from it chiefly in the following characters:

The pilosity is longer, more abundant, and not obtuse. The sculpture of the head is finer and almost effaced above; the sides of the thorax are dull, closely and very finely reticulate-punctate, not striate, as in *inscia*. Mandibles distinctly striate, with about 7 teeth. The thoracic sutures obsolete. The pronotum is much less convex lengthwise in front, and its lateral margins are not so convex. The thorax is also less narrowed than in *inscia*, and the lateral margins of the mesonotum are straight, or even slightly concave, whereas in *inscia* they are distinctly convex. The dorsum of the epinotum is wider and flatter, and the epinotal teeth are triangular and longer than the episternal; the latter are merely rounded lobes, not distinct and pointed teeth as in *inscia*. The peduncle of the petiole is very closely and finely punctured (smooth in *inscia*), and the node, seen from above, is not subconical in front, but convex, or with a slight suggestion of an anterior and two lateral margins. The 2nd node is wider than the 1st and, seen from above, hemispherical in outline.

“♀. 3.3 mm. Ocelli and mandibular margin brownish-black. Head duller than in the ♂. Eyes as large as one-quarter of the sides of the head. Mesonotum and scutellum very polished and shining. First node higher than in the ♂. Wings hyaline, with the nervures pale yellow, the anterior wing 4 mm. long. Stamford Hill, Natal (Traegaordh).”

(G.A. coll.)

T. SEMIRETICULATUM, n. sp.

♂. 2.2–2.4 mm. Castaneous or reddish-brown; the anterior third of the head, the basal third of the 1st abdominal segment, and the whole of the remaining segments somewhat paler, antennae, mandibles, and legs yellowish-brown. Pilosity sparse, composed of short, oblique, thin, and pointed yellowish hairs. Pubescence very fine and short, present only on the legs and antennae. The whole body dull, except

the 2nd and following abdominal segments, which are feebly shining. The body and the femora very closely and finely reticulate-punctate, almost granular. The reticulations are closer and finer on the abdomen and nodes, more open and coarser, but still very fine, on the sides of the thorax. In addition to this fundamental sculpture, the head has a few fine longitudinal striae in the middle, which do not reach quite as far as the occiput behind, but extend over the clypeus in front. The sides of the head, below and in front of the eyes, are also finely and widely reticulate-rugose. The anterior half of the pro-mesonotum has a very distinct and wide reticulation superimposed.

Head, excluding the mandibles, slightly longer than wide, the sides almost straight or very feebly convex, the hind margin straight. Scrobes absent. Eyes rather small, distinctly angulated in front below, placed in the middle of the sides. Frontal carinae short, divergent, not reaching the middle of the head. Clypeus with a feeble median carina, the anterior margin angularly excised in the middle. The scapes extend back as far as the posterior sixth of the head, 2nd-8th joints of the flagellum wider than long, the club not thick. Mandibles dull, very finely and closely striate, armed with 3 teeth in front and 4 very small ones behind. Thorax in front not quite as wide as the head, the sutures obsolete, not much constricted between the meso- and epinotum. Shoulders of the pronotum fairly prominent, but rounded. The thorax in profile is feebly convex above, with the anterior portion of the pronotum vertical. The meso- and epinotum feebly marginate at the sides. The dorsum of the epinotum is twice as long as it is wide at the base, where it is widest, and twice as long as the oblique declivity. The epinotal teeth are very small, shorter than their basal width, hardly as long as the episternal teeth, but more pointed. The 1st joint of the petiole resembles very closely that of *subcoecum*, var. *inscia*, but the peduncle is broader. The 2nd node is semicircular, wider behind than in front, and wider than the 1st. Both nodes have traces of fine rugae on the dorsal surface. Legs entirely dull, femora not much swollen.

♂. 2.8 mm. Brownish-black; tarsi, flagellum, and apical half of the abdomen brownish-yellow; mandibles yellow, scapes, tibiae, and femora yellowish-brown. Pilosity and pubescence as in the ♀, the pilosity almost entirely absent from the head. Head, thorax, nodes, and basal third of the 1st abdominal segment very closely and finely reticulate-punctate and dull, the sculpture on the head very fine. The declivity of the epinotum marginate at the sides, and with some wider reticulations superimposed. The apical two-thirds of the 1st

and the whole of the remaining segments of the abdomen smooth and shining. Head subquadrate, widest across the eyes, wider than long (excluding the mandibles), the sides convex, the posterior margin straight, the posterior angles narrowly rounded. The eyes occupy the anterior two-fifths of the head, not touching the base of the mandibles. The latter very finely striate and dull, with 6 or 7 minute teeth. Scapes long, as long as the 1st and 2nd joints of the flagellum taken together, extending back as far as the posterior ocelli. The latter small, not raised. Clypeus reticulate-punctate; frontal area distinct, frontal sulcus very shallow, shining, and extending back to the anterior ocellus. Mesonotum twice as wide as long, and twice as long as the scutellum. The parapsidal sutures and a median longitudinal line between the Mayrian furrows smooth and shining. In profile the dorsum and declivity of the epinotum form a continuous and steep curve. Peduncle of the petiole thicker than in the ♀, the node thicker and shorter. The 2nd node like that of the ♀, but wider and more narrowed in front. Wings tinged with dirty yellow, nervures and stigma very pale yellow.

A very distinct species, easily recognised by the sculpture. It is found only in the mounds of *Platythyrea lamellosa-rhodesiana*, usually making its nest near the top and sides of the mound, or about 2 or 3 in. down below the entrance. Its association with *Platythyrea* is probably an instance of what Wheeler has termed "xenobiosis." It may be found in about 50 per cent. of the mounds of *Platythyrea* in the Hillside district of Bulawayo, but I have never found it elsewhere.

(S.A.M., R.M., G.A. colls.); types in my collection.

T. LONGOI, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 344, ♂, 1914.

♂. 2.5-3 mm. Varying from brownish-yellow to dark yellowish red-brown, the 1st abdominal segment brown, except at the extreme base; the posterior half of the head generally a little darker. Pubescence almost entirely absent. The pilosity is fairly abundant, and consists of short, thick, obtuse, and yellowish hairs, which are erect on the body, oblique on the legs and scapes. Head and thorax fairly dull, abdomen smooth and shining. Head strongly and longitudinally rugose, with strong transverse anastomoses between the rugae, the sides of the head more reticulate-rugose. Thorax reticulate-rugose, the reticulations becoming gradually finer and closer posteriorly; 1st

node of petiole more finely reticulate than the epinotum, the 2nd node rugulose.

Head rectangular, excluding the mandibles, very little longer than wide, a little wider behind than in front, the posterior angles rounded, the posterior margin feebly concave in the middle. Eyes fairly large, placed in the middle of the sides. Frontal carinae divergent, extending back as far as the posterior fifth of the head, not forming a scrobe, although there is a slight depression below them along their basal half. Scapes extending as far back as the frontal carinae; 2nd-7th joints of the flagellum wider than long. Mandibles strongly striate, 5-dentate. Clypeus rugose, with a strong median carina, the anterior margin straight. Pronotum fairly convex lengthwise, the shoulders subangular. Thorax not greatly narrowed posteriorly, and not noticeably constricted between the meso- and epinotum. Promesonotal suture obsolete, the meso-epinotal indicated by a shallow impression. Dorsum of the epinotum longer than wide, the spines acute, slightly divergent, and as long as the interval between their bases; episternal teeth shorter than the epinotal. The declivity is shorter than the dorsum of the epinotum, vertical, marginate at the sides. First node of petiole cuboid, a little wider than long, longer than its peduncle, vertically truncate in front, nearly so behind, wider behind than in front. Second node transversely oval, half as wide again as the 1st, abdomen subtruncate at the base. Femora swollen.

George, Cape Prov. (Dr. H. Brauns.) (S.A.M., R.M., G.A. colls.)

T. INTEXTUM, Santschi, var. *CATARACTAE*, Santschi.

Voyage d'Allaud et Jeannel, p. 104, ♀, 1914.

(Variety) Ann. Soc. Ent., France, vol. 84. p. 506, ♀, 1916.

♀. 2.5 mm. Rusty red, the head a little paler, the nodes and abdomen darker or reddish-brown. Legs and antennae brownish-yellow. Head, thorax, and nodes subopaque, abdomen smooth and shining. Pilosity very sparse on the head, thorax, and nodes, more abundant on the abdomen, composed of short, thick, blunt, and yellowish hairs. Legs and antennae finely pubescent. Clypeus and the head, between the frontal carinae, finely and longitudinally striate, with a few feeble transverse anastomoses, the spaces between the striae feebly shining. Sides of the head reticulate-rugose, the floor of the demiscrobes only finely reticulate. Dorsum of thorax and nodes closely rugose or rugulose, the sculpture emphasised longitudinally. The sides of the thorax, the epinotum except at the base, and the peduncle of the petiole finely reticulate-punctate.

Head a little longer than wide, the sides more convex behind the eyes than in front of them, hardly narrower in front than behind, the posterior margin shallowly concave. Eyes fairly large, placed in the middle of the sides. Frontal carinae divergent, extending back as far as the occiput, and forming the upper margin of shallow, but fairly distinct demiscrobes. Scapes not reaching the occipital margin by as much as their own width; 2nd-7th joints of the flagellum wider than long, the 8th as long as wide. Clypeus carinate in the middle. Mandibles closely and very finely striate, with 3 distinct teeth in front, and 4 feeble teeth behind. Thorax moderately constricted between the meso- and epinotum, very slightly so between the pro- and mesonotum. Pro-mesonotal suture obsolete, meso-epinotal wide but shallow. Pronotum sloping fairly steeply downwards in front, the shoulders rounded. Thorax submarginate, narrower than the head. Dorsum of epinotum widest at the base, about one and a third times longer than wide, not much longer than the declivity; epinotal teeth wider at the base than long, somewhat obtuse. Episternal teeth triangular, a little longer than the epinotal. Peduncle of petiole very wide and nearly as long as its node; the latter, seen from above, wider than long, transversely oval, narrower in front than behind, indistinctly hexagonal in outline; seen in profile, the anterior face vertical, the posterior face oblique and merging gradually into the dorsal face. Second node transversely oval, one-third wider than long and wider than the 1st, convex above, transversely and lengthwise. Femora only slightly swollen.

Victoria Falls. (R.M., G.A. colls.)

T. PUSILLUM, Emery.

Ann. Soc. Ent., France, vol. 63, p. 38, ♀, 1895.

“♀. 1.7 mm. Ferruginous-testaceous, head dark, abdomen piceous; pilose hairs subclavate, scanty, legs with a shorter pubescence.

“Head subrectangular, frontal carinae subparallel and extending back almost to the posterior margin; closely punctured, the cheeks anteriorly and the frons very finely and longitudinally striate; mandibles shining, punctate; thorax hardly marginate, longitudinally rugoso-reticulate, epinotum obtusely bidentate, peduncle of petiole punctate, the node angular above, barely longer than thick, 2nd node subglobose, the abdomen shining.

“♀. 2.5 mm. Piceous, mandibles, antennae, legs, and apex of abdomen testaceous; head and peduncle of petiole sculptured as in the ♀, mesonotum and scutellum longitudinally striate, the epinotum

acutely bidentate; the petiole more robust, the 2nd node transversely ovate.

“Capetown (Simon).”

Var. *MOSSAMEDENSIS*, Forel.

Warburg Kunene-Zambesi Exped. (H. Baum), p. 560, ♂, 1905.

♂. 2.2 mm. Reddish-brown, the petiole a little paler, the abdomen dark brown, legs, antennae, and mandibles brownish-yellow. Head, thorax, and nodes very slightly shining, abdomen smooth and very shining. Pilosity scanty, composed of whitish and rather blunt hairs, oblique on the abdomen, erect elsewhere. Legs and antennae pubescent only, the pubescence very short and sparse.

Head longitudinally striate between the frontal carinae, reticulate at the sides, the reticulations becoming finer and smaller towards the posterior angles and the frontal carinae. Thorax, epinotum, and nodes finely reticulate-punctate. On the pro-mesonotum a coarser reticulation is superimposed, almost rugose; the sculpture of the nodes is very feeble. Sides of pronotum closely reticulate-punctate, the sides of the mesonotum more strongly so, with the meshes wider than elsewhere. The peduncle of the petiole very finely reticulate or alutaceous. Head quadrate, hardly longer than wide, the sides feebly convex, the posterior angles narrowly rounded, the posterior margin straight. Eyes placed a little in front of the middle of the sides, moderately large. Frontal carinae very divergent, prolonged back as thin lines to the posterior fourth of the head, no trace of scrobes. Clypeus tricarinate, the median carina the strongest. Mandibles 6-dentate, sparsely punctured, very finely striate. Scapes not reaching the hind margin of the head, 1st joint of flagellum nearly as long as the four following joints taken together, 2nd-7th joints wider than long. Thoracic sutures absent, but the meso- and epinotum are separated by a shallow depression. Dorsum of thorax feebly margined at the sides, half as long again as wide in front, very slightly constricted between the meso- and epinotum; shoulders of pronotum subangular. Dorsum of epinotum horizontal on its basal half, the apical half oblique, sloping towards the declivity, and twice as long as the latter. Epinotal teeth small (but longer than the episternal), as long as their basal width, directed slightly upwards, moderately divergent. Declivity vertical, marginate at the sides, the episternal teeth obtuse. Peduncle of petiole nearly as long as the node; the latter has the anterior face vertical, higher than the posterior face, which is convex and forms with the dorsal face a single convexity.

Seen from above, the node is trapezoidal, wider behind than in front, about one-third wider than long. Second node a little wider than the 1st, distinctly wider than long; the anterior margin seen from above, is convex, narrower behind than in front. Abdomen ovate, slightly truncate at the base, the basal angles widely rounded. Femora only slightly swollen.

Bulawayo, common in grassy soil. (S.A.M., R.M., G.A. colls.)

Race *LADISMITHENSIS*, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 117, ♂, ♀, 1913.

♂. 2.2-2.4 mm. Brown; the head and abdomen dark brown, legs, antennae, and mandibles ochreous. Closely allied to *mossamedensis*, but smaller and more slender, and differing from it in the following characters:

The sculpture is finer and closer; on the thorax the larger reticulations are almost absent, the pronotum smooth and shining, or only reticulate-punctate at its margins. The frontal carinae are more distinct and form shallow demicrobes, the floor of which is slightly shining and less strongly reticulate than the rest of the head. The pronotal shoulders are more rounded, and the profile of the dorsum of the thorax is not depressed between the meso- and epinotum. The epinotal teeth are much smaller, much shorter than their basal width; being hardly more than wide angles, also shorter and smaller than the episternal teeth. The thorax is not marginate above. The dorsal surface of the 1st node is as long as wide (wider than long in *mossamedensis*), submarginate in front, the anterior margin not so convex as in *mossamedensis*.

♀. 3.3-3.5 mm. Very dark brown, almost black, the extreme apices of the abdominal segments testaceous; legs, antennae, and mandibles ochreous. Head narrower in front than behind and, excluding the mandibles, one-fifth longer than wide. Mesonotum and scutellum finely, closely, and longitudinally striate, sides of thorax rugulose. Mesonotum rather flat, with the scutellum very little higher than the dorsum of the epinotum. Epinotal teeth acute, subvertical, a little longer than their basal width, longer and larger than the episternal teeth. Second node relatively wider than in the ♂, about twice as wide as long. Otherwise like the ♂.

Ladismith, Cape Prov. (Dr. H. Brauns.) (S.A.M., R.M., G.A. colls.)

Race TABLENSE, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 223, ♀, ♀, ♂, 1914.

♀. 2·2 mm. Colour as in var. *mossamedensis*. Similar to race *ladismithensis*, but the head is a little less elongate, the thorax more constricted between the meso- and epinotum. The epinotal teeth are almost obsolete, being represented by two small ridges. The frontal carinae are much shorter, without a trace of scrobes below them. Otherwise like the race *ladismithensis*.

♀. 2·6 mm. Blackish-brown. The mesonotum and scutellum feebly and longitudinally striate; the dorsum of the declivity steep, the epinotal teeth distinct, acute, triangular, not quite as long as their basal width. Deälated. Otherwise like the ♀.

♂. 2·7 mm. Black; legs, antennae, and mandibles dirty yellow. Head subquadrate, widest in the middle, a little wider behind than in front. Scapes extending back as far as the posterior ocelli. Eyes large, convex, occupying the anterior third of the head, not touching the base of the mandibles. Head dull, very finely and closely reticulate-rugulose. Mesonotum and scutellum very faintly and longitudinally striate or aciculate, shining. Epinotum reticulate-striate, dull; nodes feebly reticulate and slightly shining. Abdomen smooth and shining.

Table Mountain, nesting under stones. This is one of the few species which appear to be able to hold their own against the invading *Iridomyrmex humilis*, and it is found at the lower levels of the mountain where *humilis* has succeeded in driving out almost all other kind of ants.

(S.A.M., R.M., G.A. colls.)

T. SIMILLIMUM, Smith.

List of British Animals in B.M., Part 6, ♀, 1851.

Roger (*Tetrogmus caldarius*), Berlin Ent. Zeitschr., p. 12, ♀, 1857.
Meinert (*Myrmica caldaria*), Naturv. Afh. Dansk. Vid. Selsk. V,
p. 334, ♂, 1860.

♀. 2·8 mm. Head, thorax, and nodes brownish-ochreous, abdomen brown, the apical half and sometimes the base paler; legs, antennae, and mandibles ochreous. Very sparsely pilose, the hairs fairly thick and blunt, erect on the head and thorax, oblique elsewhere. Legs and antennae with a fine pubescence, rather sparse on the legs. Abdomen and legs shining, the rest of the body dull. The funda-

mental sculpture of the head and thorax is a very fine reticulation. Head longitudinally striate between the frontal carinae, the sides below the carinae only reticulate in the upper half, more longitudinally rugose in the lower half, and in front of the eyes more or less reticulate rugose. Thorax above fairly closely and finely rugose, more or less longitudinally; at the sides chiefly reticulate. Dorsum of epinotum reticulate only, the declivity smooth and shining. Nodes coriaceous, with a few feeble and uneven rugae. Abdomen smooth, without striae at the base. Head a little longer than wide, slightly narrowed in front of the eyes, the sides feebly convex, the posterior angles rounded, the posterior margin straight or at the most only feebly concave. Eyes of medium size, placed in the middle of the sides of the head. Clypeus with a thin median carina and a thinner stria on each side of it. Mandibles slightly shining, aciculate, very sparsely and faintly punctured. Frontal carinae produced backwards as fine lines almost as far as the occipital margin; the scapes extend back equally far. No trace of scrobes. Pro-mesonotal suture obsolete, the meso-epinotal very shallow, indistinct. Dorsum of epinotum nearly twice as long as wide; the epinotal teeth small, forming merely triangular prominences of the ends of the raised margins of the declivity; episternal lobes rounded, larger than the epinotal teeth. Declivity subvertical. First node, seen from the side, as long as its peduncle, the anterior face vertical, the posterior and dorsal faces forming a single convexity. Seen from above, it is barely wider than long. Second node subglobose, a little wider than long and wider than the 1st. Femora moderately swollen.

♀. 3.8 mm. Similar to the ♀ in greater part, the colour a little darker, the tegulae, metanotum, and a patch behind each ocellus dark brown. Pronotum widely reticulate-rugose, mesonotum and scutellum longitudinally striate, epinotum reticulate-punctate and feebly striate. Nodes rugulose, also very sparsely striate longitudinally. Moderately shining. Head more parallel-sided than in the ♀, longer than wide. Pronotum exposed above at the shoulders. Mesonotum and scutellum horizontal and flat, except the anterior third of the former, which is moderately convex. Epinotal teeth a little larger than in the ♀. (Deälated.)

♂. 3.3 mm. Ochreous; the abdomen and ocellar area slightly fuscous. Head, scutellum, and epinotum slightly dull, the rest of the body shining. Head feebly and longitudinally striate, more or less reticulate on the cheeks in front of the eyes. Frontal carinae extend back as far as the level of the anterior ocelli. Head longer than wide, widest across the middle, a little narrower behind than in front.

The eyes occupy nearly half of the sides, placed in front of the middle of the head. Mayrian furrows well defined, mesonotum smooth and shining; scutellum and epinotum faintly rugulose. The dorsum and declivity of the epinotum form a single plane, sloping steeply from base to apex. Both nodes smooth and shining. First node, seen from above, more or less lenticular, two-thirds wider than long, as long as its peduncle, the middle of the sides angular. Second node a little wider than long, and a little wider than the 1st. The 1st node is more, and the 2nd node less convex from back to front than in the ♀. Wings pale fuscous, the nervures yellowish.

Durban. A widely distributed species which has been carried through commerce to many parts of both hemispheres. It is frequently found in hothouses in temperate countries. (S.A.M., R.M., G.A. colls.)

Var. *POWERI*, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 225, ♂, 1914.

♂. 2.2-2.6 mm. Yellowish-red, antennae, legs, and mandibles reddish-yellow, 1st abdominal segment more or less brownish, the remaining segments yellow. The demiscrobes are practically obsolete, their position being indicated only by a smoother area, devoid of sculpture and not lower than the rest of the surface. The frontal carinae are not prolonged backwards, their place being taken by 3 or 4 irregular and longitudinal striae on each side; the median area between the striae almost smooth and distinctly shining. The head is only feebly sculptured behind the eyes, fairly distinctly reticulate in front of them, the floor of the meshes dull and finely rugulose. The pro-mesonotum, except the lateral and anterior margins which are finely rugulose, is smooth and shining; the epinotum and sides of the thorax very finely reticulate-punctate and subopaque, the sculpture finest on the sides of the pro-thorax. Nodes and abdomen smooth and shining. The clypeus is prominently carinate in the middle. Mandibles shining, very sparsely and shallowly punctured, 6-dentate. The pubescence of the legs and scapes is noticeably long and abundant. The scape falls short of the occipital margin by a distance equal to the length of the eye. Thorax feebly marginate above. Epinotal teeth acute, very small, distinctly shorter than the episternal lobes. The nodes of the petiole very convex above transversely, much less so longitudinally.

Kimberley (Brother Power). (S.A.M., R.M., G.A. colls.)

Var. *SHILOHENSIS*, Forel.

Deutsch. Ent. Zeitschr., Beiheft, p. 218, ♂, 1913.

♂. 2.3-2.5 mm. Bright yellow, with the reticulations and the flagellum somewhat reddish-yellow. The larger forms, found in a different locality, are darker than the smaller ones, but otherwise similar. The pilosity is fairly abundant, and is composed of pointed, yellow hairs, erect on the body, oblique and shorter on the legs and antennae, which are also sparsely pubescent. Head, thorax, and nodes feebly shining. Head, between the frontal carinae, dorsum of thorax, and sides of pro-thorax, rather strongly and longitudinally rugose, also partly reticulate. Sides of head reticulate, the rugae emphasised longitudinally, the floor of the meshes finely reticulate. Distinct demiscrobes present. Sides of meso- and epinotum duller, closely rugulose. Nodes feebly rugulose. Declivity of epinotum and the abdomen smooth and shining.

Head, excluding the mandibles, a little longer than wide, the sides moderately convex, the posterior margin straight or feebly concave in the middle. Eyes small, placed in the middle of the sides. Frontal carinae prolonged back as far as the occipital margin, divergent along their anterior third, nearly parallel behind. Scapes rather short, barely reaching beyond the posterior third of the head. Clypeus tricarinate. Dorsum of thorax distinctly marginate in front and at the sides. Pro-mesonotal suture obsolete above, the meso-epinotal indicated by a shallow groove. The thorax is moderately constricted between the pro- and mesonotum, more strongly so between the meso- and epinotum. Dorsum of epinotum one and a half times longer than the subvertical declivity. Epinotal teeth fairly large, acute, a trifle longer than their basal width, and quite twice as long as the episternal lobes; moderately divergent, directed very obliquely upwards. First node of petiole as long as its peduncle, vertically truncate in front, convex lengthwise above and behind, a little longer than wide. Second node one-third wider than the 1st, as wide as long, widest behind.

Bembesi, S. Rhodesia (the smaller forms, 2.3 mm.), in the nest of *Platythyrea cribrinodis*; Shiloh, S. Rhodesia, in the nest of *Ophthalmopone Berthoudi*. (S.A.M., R.M., G.A. colls.)

Race *ISIPINGENSE*, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 225, ♀, 1914.

♀. 3-3.3 mm. Pale ochreous yellow, the nodes slightly brownish,

the 1st abdominal segment, except the base, brownish-yellow. Moderately shining, including the legs. Pilosity scanty, composed of very thin, short, and pointed hairs, pale yellowish. Head sparsely and longitudinally striato-rugose, more reticulate at the sides. Thorax reticulate-rugose, the floor of the meshes finely and shallowly rugulose, the sides of the thorax more closely but less sharply reticulate. Nodes with a few feeble rugae. Abdomen moderately shining, very clearly and evenly punctate, the punctures small.

Head, excluding the mandibles, one-sixth longer than wide, the sides parallel, the hind margin shallowly concave, the posterior angles narrowly rounded. Eyes very convex, prominent, and large, placed in the middle of the sides. Frontal carinae prolonged back as far as the posterior sixth of the head, moderately divergent. Faint traces of demiscrobes present. Clypeus with a few longitudinal striae, hardly carinate. Mandibles smooth and shining, very finely and sparsely punctured, the masticatory margin long, armed with three distinct and small teeth in front and four smaller ones behind, the teeth widely separated. Thorax elongate, quite twice as long as wide in front, the dorsum feebly marginate at the sides and in front, very slightly constricted between the meso- and epinotum. The epinotal teeth are very minute, much shorter and smaller than the episternal, which are acute and triangular. The peduncle of the 1st segment of the petiole is almost as long as the node, and bears a small and sharp tooth below near the base; the node is a little longer than wide, and seen from the side, very convex from front to back. The 2nd node is one-third wider than the 1st, and one-third wider than long, transversely oval, narrower and lower in front than behind. Femora swollen in the middle.

Isipingo, Natal (H. B. Marley). (S.A.M., R.M., G.A. colls.)

Race DELAGOENSE, Forel.

Mitth. Schweiz. Ent. Ges., vol. 9, p. 80, ♂, ♀, ♂, 1894.

“ ♂. 2.2–2.5 mm. Like *simillimum* i. sp., but the frontal carinae are straight or only feebly divergent (not curving round again towards each other posteriorly). Eyes nearer to the anterior than to the posterior angles of the head. Thorax rather longer and narrower. Epinotum with two elongate tubercles, barely dentiform. First node of petiole less thick, abruptly truncate and highest in front, sloping convexly backwards from the anterior margin. Both nodes shining, with a very shallow sculpture; abdomen smooth. The club is shorter than the rest of the flagellum (quite as long as the rest in *simillimum*

i, sp.). Sculpture and hairs as in the type species, even so the size of the head in relation to that of the body, but a little more slender; legs somewhat stouter. Yellowish, thorax and head reddish-yellow, the abdomen paler.

“♀. 3-3.4 mm. Head much longer than wide (hardly so in the type species). Thorax longer and lower, the epinotal teeth broad, obtuse, and triangular. First node thinner than in the type species, almost squamiform, thinner than in the ♀. Dorsum of epinotum at least as long as the declivity. Sculpture, pilosity, and colour as in the ♀. Wings almost hyaline, with very pale nervures and stigma. Thorax narrower than the head.

“♂. 2.9 mm. Dirty brownish-yellow. Epinotum with two feeble tubercles; the dorsum much longer than the declivity. Head and epinotum reticulate-punctate, slightly shining. Abdomen, mesonotum, and petiole shining and fairly smooth. Antennae 10-jointed, the 2nd joint of the flagellum long. Otherwise like the ♀.”

Delagoa (Dr. Liengme); Natal (Wroughton).

Race BOTHAE, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 425, ♀, ♀, ♂, 1910.

“♀. 2.3-2.5 mm. Larger than the type of the species and its race *delagoense*. Differs from both by its more robust stature. The dorsum of the epinotum is wide, only very little longer than wide; the episternal and epinotal teeth stronger, more spinose. The 1st node is distinctly wider than long, plainly truncate in front, with a well-defined upper anterior margin. Both nodes dull, reticulate-punctate, sometimes striate. Head and thorax chiefly brownish; thorax reddish-brown. Tarsi, antennae, and mandibles reddish-yellow, the club brown.

“♀. 3 mm. Like the ♀. First node nearly twice as wide as long.

“♂. 3 mm. Nodes a little wider. Otherwise like the type of the species.”

Basutoland and Natal (Wroughton, Haviland).

T. CAESPITUM, Linn., race SCHULTZEI, Forel.

Syst. Nat. Edition. 10a, p. 581, ♀, 1758.

(Race) Schultze Reise Süd Afrika, vol. 4, p. 19, ♀, 1910.

“♀. 1.9-2 mm. Mandibles finely striate, fairly shining, with 6 or 7 teeth. Head distinctly, although not greatly flattened, quadrangular,

not wider than long, feebly concave behind. Eyes in the middle of the sides of the head. Clypeus feebly carinate; the frontal carinae short. The scape almost reaches the posterior margin of the head; 3rd-5th joints of the flagellum wider than long. No trace of a scrobe. Thorax short; the profile of the dorsum hardly, or not at all interrupted (more distinctly interrupted in the race *depressum*). Epinotum with very small teeth. First node almost cuboid, as in *caespitum*, var. *punicum*, Smith. Clypeus, frons, cheeks, and thorax finely and feebly longitudinally striate (sometimes indistinctly) shining. The rest of the body smooth. Pilosity and pubescence as in the other races. Brown; legs and antennae brownish-yellow, abdomen dark brown.

"Kgokong-Kang, Kalahari (Schultze) in sand.

"Near the race *depressum*, Forel, but much smaller, not so smooth and without any emargination of the thorax, with a more cuboid 1st node. Also closely allied to the var. *punicum*, Smith, but still smoother and with the head depressed. Differs from *pusillum*, Emery, by the short frontal carinae."

The type species has a wide distribution, occurring over the whole of Europe and the south shores of the Mediterranean.

T. ERICAE, n. sp.^v

♂. 1.7 mm. Pale ochreous yellow, the abdomen slightly brownish-yellow; the clypeus more reddish-yellow. Pilosity abundant, composed of thin, whitish hairs, which are erect on the head, thorax and nodes, oblique on the abdomen. Legs and antennae very sparsely pubescent. Head, dorsum of thorax and the nodes nitidulous, finely reticulate-rugose, the sculpture emphasised longitudinally on the head between the frontal carinae, the sides of the head and thorax more densely sculptured, almost rugulose. Abdomen smooth and shining, and in some examples, with a golden reflection on the sides. Head subquadrate, excluding the mandibles as long as wide, the sides nearly parallel, the posterior margin straight, a little narrower in front than behind. Eyes large, placed a little in front of the middle, occupying about one-fifth of the sides of the head. Frontal carinae divergent, extending back almost as far as the occiput, and forming the upper boundary of the fairly deep and wide scrobes. The latter are smooth and shining, divided into two parts over the basal third, by a longitudinal ridge. Scares as long as the scrobes; 1st joint of flagellum as long as the 2nd, 3rd and 4th taken together, 3rd-7th joints quite twice as wide as long, the club one and a half times longer than the rest of the flagellum. Mandibles shining,

sparsely punctured, the masticatory margin piceous, with 3 distinct teeth in front, indistinctly denticulate behind. Clypeus feebly carinate in the middle. Frontal area triangular, fairly well defined. Thoracic sutures obsolete. Thorax narrower than the head, widest in front, narrowing gradually behind towards the epinotal teeth, slightly constricted between the meso- and epinotum, one and a half times longer than wide in front, the shoulders of the pronotum rounded. In profile, the thorax is moderately convex lengthwise, the dorsum of the epinotum oblique and merging gradually into the declivity. Epinotal spines acute, divergent, half as long as the interval between their bases, hardly longer than their basal width, one-third longer than the episternal teeth. Declivity marginate at the sides. Peduncle of the petiole half as long as its node; the latter, seen from above, is subglobose, nearly one-quarter wider than long. Seen in profile, it is obliquely truncate in front, and the posterior-dorsal face is convex. The 2nd node is transversely oval, twice as wide as long, one-quarter wider than the 1st, convex transversely and longitudinally, as wide in front as behind. Abdomen globose. Femora very slightly swollen.

Hillside, Bulawayo, in sandy soil. (S.A.M., R.M., G.A. colls.), type in my collection.

This species appears to me to be intermediate in structure between *Tetramorium* s. str. and its subgenus *Triglyphothrix*. The absence of branched hairs and the less transverse 1st node are the only points of difference between it and the subgenus.

I have much pleasure in associating this species with the name of Mrs. Hepburn, whose unfailing hospitality has given me the opportunity to collect many of the interesting species which are found at Hillside, near Bulawayo.

Subgenus TRIGLYPHOTHRIX, Forel.

Ann. Soc. Ent. Belg. C.R., vol. 34, p. cvi, 1890.

Characters.

♂. Antennae 12-jointed, the club 3-jointed. Mandibles and clypeus as in *Tetramorium*. Distinct antennal scrobes nearly always present, divided by a longitudinal carina into two halves, for the reception of the folded scape and flagellum. Thorax stout and short, the thoracic sutures obsolete or nearly so. Epinotum armed, episternal teeth also present, as in *Tetramorium*. First joint of petiole with a short peduncle; both nodes, or at least the 2nd, much wider than long. Hairs usually trifid, sometimes polyfid.

♀. Similar to the ♂ but larger; forewing with one closed cubital cell, the radial cell open.

♂. Antennae 10-jointed; 2nd joint of flagellum very long, 3rd joint short, shorter than the 1st. Mayrian furrows present. Nodes of petiole not so wide as in the ♀, the 1st joint subpedunculate.

This subgenus is distributed throughout the Ethiopian and Indo-malayan regions. One species, *T. striatidens*, Emery, has become almost cosmopolitan, and is often found in hothouses in temperate countries. The ants of this subgenus are rather timid insects, generally feigning death when touched. The nests are made in the ground. One species, *T. Arnoldi*, Forel, is more frequently found in the nests of other ants, apparently in plesiobiotic or cleptobiotic association.

Key to the ♂ ♂ of Triglyphothrix.

- (4) 1. Yellow or reddish-yellow species.
- (3) 2. Thorax dull, very closely and finely punctured; hairs simple. *Arnoldi*, Forel.
- (2) 3. Thorax coarsely reticulate and shining between the reticulations. *auropunctatus*, Forel, var. *fusciventris*, Forel.
- (1) 4. Black or brownish species.
- (6) 5. Epinotum with long spines, as long as the interval between their bases. *Constanciae*, Arnold.
- (5) 6. Epinotum armed only with small teeth.
- (8) 7. Second node of petiole at least two and a quarter times wider than long. *Marleyi*, Forel.
- (7) 8. Second node of petiole not more than twice as wide as long.
- (10) 9. Thorax irregularly reticulate, brownish; larger species, 3·3 mm. *Inezulae*, Forel.
- (9) 10. Thorax strongly and evenly reticulate, piceous; smaller species, 2·6 mm. *Hepburni*, Arnold.

Microps, Mayr, and *Trimeni*, Emery, are not known to me in nature, and are not included in the above key. Judging by the descriptions *Hepburni* appears to differ from *Trimeni* by its larger size and by the 1st node of the petiole, which is clearly wider than long; *microps* is apparently allied to *auropunctatus*, but has much smaller eyes.

T. AUROPUNCTATUS, Forel.

Schultze, Reise Süd-Afrika, vol. 4, p. 20, ♂, ♀, 1910.

“ ♂. 2·1–2·6 mm. Mandibles strongly striated, punctured, with 3

distinct teeth in front, and 4 indistinct teeth behind. Clypeus carinate, distinctly emarginate in the middle. Head quadrangular, as wide behind as long, narrowed in front, nearly straight behind (hardly feebly concave). Eyes decidedly small, consisting of 10–12 facets, but yet larger than in *microps*. The scape, incrassate from the middle, reaches the posterior fifth of the head; the 2nd–5th joints of the flagellum are more than three times wider than long. The frontal carinae form exteriorly a deep and wide scrobe for both scape and flagellum, the scrobe bending round behind. Between the groove for the scape and that for the flagellum, there is a raised and sharp triangle, with its base forwards. The floor of the scrobe is shining and finely reticulate. The eye lies close to the outer margin of the groove for the flagellum, which is obsolete in front. Thorax very wide, short, feebly convex, almost marginate above, with blunt anterior angles. Pro-mesonotal suture absent. Meso-epinotal suture feeble, a suggestion of a metanotum. Epinotal teeth broad, triangular, fairly short and acute; episternal teeth flat and obtuse. First node of petiole with a very short peduncle, the node two and a half times wider than long, almost vertically truncate in front and behind, the upper surface almost flat or only feebly convex transversely, a little declivous behind, the anterior margin feebly emarginate. Second node nearly three times as wide as long, somewhat wider than, and nearly as high as the 1st, with a straight or even slightly concave anterior face, and a convex posterior face. Abdomen truncate in front. Femora distinctly swollen in the middle. Head, thorax, and 1st joint of the petiole coarsely and densely, longitudinally rugose, coarsely and closely punctured between the rugae. Second joint of the petiole (the 1st also partly) coarsely punctured. The rest smooth, merely very finely and sparsely punctured. The whole body, femora and tibiae closely covered with fairly short, yellow and polyfid hairs. Yellowish-red, abdomen more brownish-yellow. The floor of the coarse punctures appears golden in certain lights.

“♀. 3.3 mm. Like the ♂. Mesonotum flat above, longitudinally rugose, sharply and coarsely punctured. Nodes somewhat wider, otherwise like the ♂. Darker yellowish-red; a spot on the vertex, the post-scutellum, a part of the mesonotum, and the abdomen brown. Deilated. Pubescence and all else as in the ♂.

“Natal, 2500 metres (Haviland).”

Var. BULAWAYENSIS, n. v.

♀. This differs from the above by the absence of the triangular prominence between the two halves of the antennal scrobe, and by the

entire absence of the meso-epinotal suture. The floor of the punctures without any golden reflection.

Bulawayo, living in the nests of *Platythyrea cribrinodis*, apparently in plesiobiosis. (S.A.M., R.M., G.A. colls.), type in my collection.

Var. *PALLENS*, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 424, ♂, 1910.

"♂. 2 mm. A little smaller than the type of the species. Entirely pale yellow, with the same golden punctures. Epinotal spines shorter, only a little longer than their basal width. Nodes of the petiole less broad, the 2nd only twice as wide as long, the 1st one and a half times wider than long.

"Natal (Haviland)."

Var. *FUSCIVENTRIS*, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 116, ♀, 1913.

"♀. 2.2-2.5 mm. A little smaller than the type of the species. Epinotal spines distinctly shorter, subdentiform but acute, very little longer than their basal width. The same golden punctures as in the type. The sculpture a shade finer and more rugose. Nodes a little wider. Of a darker yellow and more brownish colour than that of the type. Abdomen brownish. Otherwise like the type species."

The thorax is narrowed between the meso- and epinotum, but there is no trace of the suture dorsally. The margins of the thorax and the edges of the epinotal teeth are more darkly coloured. The basal third of the abdominal segments paler than the remaining portions. Some of the hairs are simple, the rest are shorter and trifid.

Bulawayo, like var. *bulawayensis*, also nesting in and near the galleries of *Platythyrea cribrinodis*. (S.A.M., R.M., G.A. colls.)

Var. *RHODESIANA*, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 221, ♀, 1913.

"♀. 3.6-4 mm. Darker than the type of the species, dark brown. Frons, cheeks, mandibles, antennae, legs and transverse bands on the posterior portion of the abdomen, yellowish-red. Head less emarginate behind and more narrowed in front. The 1st node is more rounded at the sides, and above all, the 2nd node is differently shaped, being obtusely and conically pointed laterally, less flat above, forming more of a rounded, transverse edge. Otherwise like the type."

The colour is reddish-brown, that of the head lighter, especially on the anterior third. The base of the 1st abdominal segment is evenly and shallowly punctured.

Bembesi, S. Rhodesia. (S.A.M., R.M., G.A. colls.)

T. TRIMENI, Emery.

Ann. Soc. Ent. France, vol. 63, p. 40, ♂, 1895.

“ ♂. 1.7 mm. Allied to *T. Walshi* and *lanuginosa* (Indian species), but differing in having the 2nd node of the petiole transverse, distinctly wider than the 1st; the 1st abdominal segment has foveiform punctures, and the epinotal spines are shorter.

“ ♀. 3.2 mm. Very like the ♂; abdomen similarly sculptured, 2nd node of the petiole less transverse. Kimberley, 1 ♀, 2 ♀ (Simon).”

Also a variety of the ♂; “less strongly sculptured, 1st abdominal segment without foveiform punctures. Hammans Kraal, 1 specimen.”

In addition to the above, the author remarks that in *Trimeni* the 2nd node is distinctly wider than the 1st and strongly transverse, the 1st appears hardly wider than long.

T. MICROPS, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 25, ♂, ♀, 1901.

“ ♂. 2.3-2.5 mm. Yellow, fairly dull, abdomen shining. The whitish erect hairs on the upper surface of the body are not long, but are fairly abundant. Mandibles longitudinally striate. The head is coarsely reticulate-punctate, the frons and vertex chiefly coarsely and longitudinally rugose, the clypeus with longitudinal striae and a little median carina, somewhat impressed in the middle in front, the anterior margin emarginate; the scrobe is shining and fairly finely and irregularly rugose, with a few strong transverse striae near the antennal socket. The eyes are very small, composed of from 6-9 facets. Seen in profile, the closely reticulate thorax has the pronotum strongly curved backwards from below and in front; the mesonotum is only slightly convex, the epinotum moderately so. The latter bears two large, triangular, and equilateral teeth. The dorsum of the epinotum merges gradually into the declivity. . . . The 1st node of the reticulate petiole is twice as wide as long, the 2nd node somewhat wider than the 1st, and fully twice as wide as long. The abdomen is smooth, with scanty piligerous punctures.

“ ♀. 3.4-3.5 mm. More or less reddish-yellow, or also partly

brown; the pubescence and sculpture as in the ♀. Mesonotum and scutellum longitudinally rugose. Otherwise like the type of the ♀. The anterior wings fairly clear. Port Elizabeth. (Dr. H. Brauns)."

T. ARNOLDI, Forel. (Plate VII, fig. 93.)

Deutsch. Ent. Zeitschr. Beiheft, p. 220, ♀, 1913.

♀. 2.2–3 mm. Ochreous or reddish-ochreous; antennae, and sometimes also the abdomen, darker. Head, thorax, and petiole dull, abdomen smooth and shining. Mandibles and clypeus slightly shining. Head, thorax, and petiole very closely and finely reticulate-punctate or granulate; in addition, the head above is finely and longitudinally striate, the scrobes and the cheeks in front finely punctate only. Legs slightly shining. Pubescence very short and yellowish, fairly scanty all over; the erect pilose hairs are also short and sparse. All the hairs simple.

Head as long as wide, slightly narrowed in front, the posterior angles widely rounded, the posterior margin almost straight. Clypeus feebly carinate in the middle, and with two or three longitudinal and raised lines on each side of the carina; the anterior margin straight. Frontal area small and indistinct. Mandibles finely striate, with 7 teeth, the 4 posterior ones indistinct. The frontal carinae diverge behind the antennal sockets and are continued in a slight curve almost to the posterior margin of the head, where they curve downwards and forwards below the eye. The scrobe so formed is distinct but shallow, and is divided into two by a longitudinal raised line. Eyes small, placed at about the middle of the sides. Scape of antenna extends back almost to the posterior fourth of the head; 2nd–7th joints of the flagellum quite two and half times wider than long. Thorax short, not longer than the head, considerably narrowed between the meso- and epinotum, feebly convex longitudinally, a little more strongly so transversely, the anterior face abrupt, the shoulders of the pronotum rounded. Thoracic sutures obsolete. Epinotum marginate laterally, the dorsum one and a quarter times longer than wide, the declivity oblique and shorter than the dorsum. Epinotal teeth almost triangular, very little longer than wide at the base, slightly divergent, merging in front and behind in the raised margins of the epinotum. Episternal teeth small and blunt, smaller than the epinotal. First joint of petiole with the peduncle shorter than the node; the latter one and a half times wider than long, convex behind transversely, straight, or feebly concave in front, the dorsal surface feebly convex transversely and sloping downwards and backwards.

Second node wider than the 1st, twice as long as wide, not longer than the 1st, a little narrower behind than in front.

♀. 3·8 mm. (hitherto undescribed). Dark yellowish-brown, the head somewhat reddish, the legs and antennae paler than the body, the sides of the mesonotum in front dark brown. Pilosity and pubescence as in the ♂. Sculpture similar to that of the ♂, but the puncturation all over is a little stronger, and the longitudinal striae on the head are sharper. The base of the 1st abdominal segment is closely and very finely punctured, rather dull. The eyes are large, occupying about one-quarter of the sides of the head; there is a black spot behind each of the three ocelli. Mesonotum rounded in front, flat behind, the pro-mesonotal suture arcuate. The sides of the mesonotum and scutellum sparsely striate. Dorsum of epinotum wider than long, the declivity nearly vertical. The petiole is similar to that of the ♂, but the nodes are shorter (thinner). Wings slightly yellowish, the nervures dirty yellow.

The smaller sized ♂♂, 2·2 mm., and the ♀ were taken in an independent nest under a stone; except in size, they do not appear to differ from the larger form. The latter was taken in nests made in the walls of the galleries of *Platythyrea lamellosa-rhodesiana*, and also of *Ophthalmopone Berthoudi*

Shiloh and Bulawayo, S. Rhodesia. (S.A.M., R.M., G.A. colls.)

✓
T. CONSTANCIAE, n. sp. (Plate VII, figs. 94, 94a.)

♂. 3·3–3·6 mm. Black; mandibles, antennae, and tarsi reddish-yellow, femora and tibiae yellowish-brown in the middle, reddish-yellow at their base and apex. Densely clothed all over, except on the tarsi and flagellum, with fairly long, erect, and whitish hairs, which are distinctly trifid, not hiding the sculpture. Abdomen and legs shining, the rest of the body moderately shining between the reticulations. Head strongly and longitudinally rugose, also somewhat reticulate, owing to the presence of feebler transverse anastomoses. Thorax and 1st node of petiole strongly reticulate, the meshes rather wide, especially on the epinotum; 2nd node less strongly and less distinctly reticulate. Abdomen smooth.

Head a little longer than wide, a little narrower in front than behind, the posterior margin straight, the posterior angles strongly rounded. Mandibles slightly shining, feebly striate and sparsely punctured, armed with distinct teeth in front, indistinctly dentate behind. Clypeus with a median carinula and 3 or 4 longitudinal raised lines on each side of it, the anterior margin straight. Frontal area obsolete, frontal sulcus replaced by a raised line. The frontal

carinae sinuate, divergent, extending back to the posterior fifth of the head. The scrobes are shining, with a few transverse striae; the longitudinal ridge, which divides the scrobe into two parts for the reception of the scape and flagellum respectively, does not reach the posterior end of the scrobe, the outer half of the scrobe not well defined. Eyes large, prominent and very convex, their margins angular below, placed in the middle of the sides of the head. The scape extends to the posterior fifth of the head; 1st joint of the flagellum twice as long as wide, 2nd-7th joints wider than long. Thorax only slightly constricted between the meso- and epinotum, thoracic sutures entirely absent. The thorax is convex transversely in front and above, and in profile, moderately convex in front. The epinotal spines are very acute, directed upwards and outwards, rather long, a little longer than the interval between their bases. The brow of the declivity, between the spines, is transversely striate; the declivity marginate at the sides, the raised margins continued into the short and blunt episternal teeth. First joint of the petiole with the peduncle half as long as the node. The latter, seen from above, has the anterior margin almost semicircular, the posterior margin moderately convex; it is three-fifths wider than long. The 2nd node is transversely oval, very convex from front to back, a little wider than the 1st node, and twice as wide as long. Abdomen one-quarter longer than wide, the sides not very convex.

Matopo Hills, S. Rhodesia. (S.A.M., R.M., G.A. colls.), type in my collection.

This species is allied to *gabonensis*, André, and *mucidus*, Forel. From the former it differs by its smaller size, colour, the shape of the 1st node and the divided scrobes; from *mucidus* it differs by the straight anterior margin of the clypeus, by the angulated lower margin of the eye, by the deep scrobes, the shining head and thorax, and by the hairs, which are all trifid, not divided into six or more branches as in *mucidus*. Quite distinct from *Eminii* and *Rothschildi*, Forel.

✓
T. HEPBURNI, n. sp.

♀. 2.3-2.8 mm. Colour as in *Constanciae*. Pilosity whitish, trifid, less dense than in *Constanciae*, particularly on the head. Sculpture of the head and thorax as in that species, but the reticulations a little closer. The nodes of the petiole reticulate, the 2nd not less strongly than the 1st. Abdomen shining, very sparsely but distinctly punctured, the punctures on the basal fourth shallow and foveiform. Head a little longer than wide, hardly narrowed in front, the hind

margin more convex than in *Constanciae*. The thorax is narrower posteriorly than in that species, the width across the brow of the declivity being a little less than half the width across the anterior angles of the pronotum (much more than half in *Constanciae*). Epinotal teeth small and triangular, not longer than their basal width, slightly divergent. The 1st node of the petiole, seen from above, is transversely oval, one and a half times wider than long, the anterior margin not more convex than the posterior, not semicircular as in *Constanciae*. The 2nd node similar to that of *Constanciae*, transversely elliptical, almost twice as wide as long, not quite one-fifth wider than the 1st. Seen in profile, the pro-mesonotal portion of the thorax is much less convex than in *Constanciae*. Otherwise like that species.

♀. 3.6 mm. Pronotum very short in front, more exposed at the lateral angles. Mesonotum longitudinally rugose, slightly convex in front, flat posteriorly. Scutellum moderately convex. The sculpture, especially on the abdomen, is a little stronger than in the ♂. Wings tinged with yellow, nervures and stigma pale brownish-yellow. Otherwise like the ♂.

♂. 3 mm. Black legs, antennae and mandibles dirty yellow, femora brownish-yellow. Pilose hairs trifid, much less abundant but longer than in the ♀. Mesonotum very sparsely pilose. The hairs on the head short, not branched. Head slightly shining, reticulate-rugose. Mesonotum smooth and shining. Scutellum and nodes slightly shining and feebly rugose. Epinotum unevenly reticulate-rugose and dull. Abdomen smooth and shining.

Head subquadrate, about as long as wide, the posterior angles widely rounded, the posterior margin convex, higher behind than in front. Eyes large, occupying about one-third of the sides, placed a little in front of the middle; ocelli small. Scapes a little longer than the 2nd joint of the flagellum. Mesonotum very convex in its anterior half, somewhat flattened above posteriorly. Mesonotum and scutellum much higher than the epinotum. The latter is unarmed, and its upper surface forms a continuous and steep slope from base to apex, the dorsum and declivity not differentiated. The 1st node, including its articular portion behind, as long as wide, much narrower than in the ♀; 2nd node transversely oval, one-quarter wider than the 1st, half as wide again as long. Wings as in the ♀.

Hillside, Bulawayo; Matopo Hills, S. Rhodesia. (S.A.M., R.M., G.A. colls.), types in my collection.

This species, like the foregoing, has been found by me only on the granite and syenite formations. The Hillside locality, near Bulawayo, is a syenite area, which rises like a small island out of the surrounding

schists. This area harbours not a few species, which, as far as my experience goes, are never to be found on the schist formation. Such are the two species just described, and also *Camponotus mystaceus*, Emery, *Acantholepis longinoda*, n. sp., *Meranoplus spininodis*, n. sp., etc.

T. MARLEYI, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 221, ♀, 1914.

♀. 2.5–3 mm. Brown, the abdomen darker, the legs brown, the antennae, mandibles, and tarsi ferruginous. Densely clothed with a white pilosity, not very long, consisting of hairs divided into 3, 4, or more branches. The pilosity is less abundant on the legs and scapes. Head, thorax, and 1st node closely reticulate, the rugae on the head emphasised longitudinally. The spaces between the reticulations feebly shining. Abdomen smooth and shining, very sparsely and finely punctured, except near the base, which is more strongly punctured. Second node of petiole only with large and shallow punctures.

Head, excluding the mandibles, as long as wide, or with the mandibles as long as the thorax, only a little narrower in front than behind. The antennal scrobe is almost obsolete. The scapes do not extend back quite as far as the occipital margin. Anterior margin of the clypeus straight or feebly convex. Mandibles sharply striated, finely and sparsely punctured, with three distinct teeth in front. Eyes large, convex, placed in the middle of the sides of the head. Thorax not very convex transversely, more so longitudinally, the anterior angles rounded, the anterior face less convex than in *Constantiae*. The thorax is slightly constricted between the meso- and epinotal regions, twice as wide across the shoulders of the pronotum as it is between the epinotal spines. The latter are short, very little longer than they are wide at the base. Peduncle of the petiole half as long as its node. The latter is distinctly higher than the 2nd, the sides and the anterior dorsal margin convex, the posterior margin and face straight, nearly twice as wide as long; the dorsal surface convex transversely. The 2nd node is almost three times wider than long, one-third wider than the 1st node, the posterior margin more convex than the anterior. All the femora moderately swollen in the middle.

Durban and Krantz Kloof, Natal (H. W. Marley). (S.A.M., R.M., G.A. colls.)

This species differs from all the others in our region by the very wide 2nd node.

T. INEZULAE, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 221, ♀, ♂, 1914.

♀. 2.8–3.2 mm. Very similar to *T. Hepburni*, but larger. In colour and pilosity like *Marleyi*. Head, thorax and nodes reticulate, the sculpture emphasised longitudinally. Abdomen shining, sparsely and evenly punctured, fairly closely punctured at the base.

Head feebly narrowed in front, almost quadrate, slightly longer than wide, the sides feebly convex, the posterior margin straight. Mandibles shining, striated and punctured, with 3 distinct teeth in front, and 3 smaller and less acute teeth behind. Distinct scrobes present, smooth and shining, divided by a longitudinal ridge into two halves. The scrobes and scapes extend back to the posterior fourth of the head. The thorax is similar to that of *Marleyi*, but a little longer in proportion to the width. The epinotal spines are a trifle longer than in *Marleyi*, longer than their basal width. The peduncle of the petiole is a little shorter than the node; the latter, seen from above, is oval, the anterior face hardly more convex than the posterior, not quite twice as wide as long, not higher than the 2nd node. The latter as long as the 1st, not quite twice as wide as long, a little wider than the 1st, and seen from above, also oval.

♂. 4.2 mm. Colour and pilosity as in the ♀, except the mandibles, antennae, tibiae and tarsi, which are pale brownish-yellow; the hairs on the abdomen are mostly simple. Head, pronotum, sides of epinotum and the nodes feebly reticulate. Mesonotum shining, sparsely punctured, also with a few feeble longitudinal lines. Dorsum of epinotum longitudinally striate. Abdomen smooth and shining. Mandibles with 5 small teeth. Head quadrate, the posterior angles rounded, very slightly convex above. Eyes large, occupying the anterior third of the sides. The scapes extend back as far as the posterior ocelli; 2nd joint of flagellum three times as long as the 1st, shorter than the scape. Thorax much wider and higher than the head, the pronotum not visible from above. The dorsum of the epinotum is more than twice as long as the declivity, and ends in two blunt ridges or tubercles. Nodes of petiole shorter than in the ♀, the peduncle of the 1st node longer. Wings pale dirty yellow, nervures yellow. The petiole is much shorter and lower than in *desertorum*, Forel. The epinotum in the latter is rounded, not angular.

Beach Bush, Durban; nesting in sand dunes. (S.A.M., R.M., G.A. colls.)

T. DESERTORUM, Forel.

Schultze, *Reise Süd-Afrika*, vol. 4, p. 20, ♀, ♂, 1910.

“♀. 3.3 mm. Mandibles fairly shining, densely punctured. Clypeus carinate, moderately emarginate. Head quadrangular, as wide as long, feebly concave behind, distinctly narrowed in front. There is a scrobe for the whole of the scape, with a feebly rugose floor; posteriorly the scrobe curves round and forms the beginning of a flat depression, behind the eye, for the base of the flagellum. The large eyes, placed a little behind the middle of the head, occupy one-third of the sides. The scape, like its scrobe, extends back to the posterior fourth of the head; 2nd–7th joints of the flagellum much wider than long. Thorax nearly as wide as the head. Mesonotum flat above. Epinotum with two strong, triangular and almost spinose teeth (slightly longer than their basal width), the dorsum a little longer than the declivity. First node with a fairly short peduncle; both nodes rounded above and at the sides, about one and three-quarter times wider than long, the 2nd node one-third to one-half wider than the 1st. No episternal teeth, only a curved ridge. Coarsely and longitudinally rugose (including the epinotum above), coarsely reticulate between the rugae; the petiole and some places in part only coarsely reticulate or reticulate-punctate, barely shining. Abdomen and legs smooth, but with fairly abundant piligerous punctures. The whole body, including the femora, abundantly clothed with a short, woolly pilosity of 3–5 branched hairs. On the tibiae and scapes the hairs are oblique, almost decumbent, and mostly simple. Red-brown to brownish-red; abdomen brown. Tarsi, tibiae, flagellum and mandibles brownish-yellow-red. Wings not long, faintly tinged with yellow, almost hyaline, with pale nervures and costa.

“♂. 3.2–3.4 mm. Mandibles 6-dentate, shining. Clypeus arched, feebly emarginate. Head quadrangular but rounded, as wide as long. Eyes not large. The scape does not reach the occipital margin. Second joint of the flagellum two and a half times longer than the 1st, and not quite as long as the scape. Epinotum with two tubercles; nodes more angular than in the ♀, otherwise similar. Head coarsely, petiole more finely reticulate; epinotum and sides of thorax coarsely and longitudinally rugose, the rest smooth, sparsely punctured. Hairs on the body mostly bifid or trifid, or simple. Legs and antennae only with an almost decumbent pilosity. Fairly dark brown; antennae, mandibles and legs yellowish, femora brownish. Wings as in the ♀.

“Between Kgokong and Kang, Kalahari (Schultze).”

SUBGENUS XIPHOMYRMEX, Forel.

Mitth. Schweiz. Ent. Ges., vol. 7, p. 385, 1887.

Characters.

♂ and ♀. Antennae 11-jointed; antennal scrobes usually well defined.

Nodes generally squamiform.

♂. Antennae 10-jointed.

Key to the ♂♂ of Xiphomyrmex.

- (2) 1. Mandibles tridentate; 1st node not squamiform, *fossulatum*, Forel.
- (1) 2. Mandibles with 5 or more teeth; 1st node more or less squamiform.
- (4) 3. Promesonotum smooth. *Humbolti*, Forel, var. *victorensis*, Forel.
- (3) 4. Promesonotum coarsely rugoso-reticulate. *Weitzaeckeri*, Emery.

T. (XIPHOMYRMEX) WEITZAECKERI, Emery.

Ann. Soc. Ent., France, vol. 63, p. 39, ♀, 1895.

♀. 3.5–3.8 mm. Dark brown, the abdomen piceous, legs and scapes light brown, flagellum, tarsi, and mandibles more or less dark brownish-yellow. Shining, especially the abdomen. Pubescence short and very scanty, present only on the legs and antennae. Pilosity rather sparse, composed of pale yellowish and erect hairs, abruptly truncate at the apex. Head longitudinally and strongly striate or striato-rugose between the frontal carinae, coarsely reticulate-rugose at the sides. Thorax very coarsely reticulate-rugose, the rugae emphasised longitudinally. The spaces between the striae and rugae finely reticulate, more distinctly so on the head than on the thorax. Declivity of the epinotum, the nodes and abdomen smooth and shining, the latter very polished. The 1st node has three impressed lines on the dorsal surface, the outer ones oblique.

Head as long as wide, very little narrower in front than behind, the posterior margin nearly straight, the sides feebly convex, very convex above transversely. Eyes fairly large, placed in the middle of the sides. Frontal carinae divergent, prolonged backwards as strong ridges almost to the occipital margin, curving outwards and forwards at their posterior extremity. The floor of the demiscrobes finely reticulate only. Clypeus with a strong median carina, which is usually forked at its anterior end; the anterior margin feebly excised in the middle. Scapes as long as the scrobes; the flagellum stout, 2nd–7th joints wider than long, the club fairly thick, longer than the rest of the flagellum. Mandibles very finely striate, armed with 6 or 7 rather broad teeth. Dorsum of thorax obtusely marginate at the

sides, slightly narrowed between the pro- and mesonotum, very much more so between the meso- and epinotum. Pro-mesonotal suture obsolete, the meso-epinotal wide but not very deep. Thorax one and a half times longer than it is wide in front, twice as wide in front as it is between the epinotal spines, fairly convex above lengthwise, particularly the pronotum. Epinotal spines divergent, acute, directed obliquely upwards, as long as the dorsum of the epinotum, much longer than their basal width, and longer than the interval between their bases. Episternal teeth small and triangular, hardly one-third as long as the epinotal. Declivity subvertical, 1st segment of petiole with the peduncle longer than the node; the latter squamiform, longer vertically than it is wide, thinner at the sides than at the summit, the anterior and posterior faces vertical, inclined slightly forwards. Second node lenticular, the anterior and posterior faces meeting above acutely, slightly wider than the 1st node, and nearly twice as wide as it is long. Abdomen subglobose, a little longer than wide. Femora moderately swollen.

♀ (hitherto undescribed). 4 mm. Piceous. Thorax wider than the head. Pronotum coarsely reticulate-rugose, the shoulders subangular. Anterior margin of mesonotum very convex. Mesonotum, scutellum, and epinotum strongly and longitudinally striate; the striae on the epinotum do not quite reach the bottom of the declivity. Epinotal spines horizontal, less divergent than in the ♂. Wings hyaline, nervures and stigma pale yellow.

In the largest specimens of the ♂ the sculpture is stronger and closer, and the spines are directed more steeply upwards, but the existence of forms intermediate in size and sculpture precludes their separation as a distinct variety.

Redbank, S. Rhodesia; Durban (3·4–3·5 mm.); Bulawayo (3·6 mm.); Hope Fountain, S. Rhodesia (3·8 mm.).

This species forms largely large nests under stones. It preys to a great extent on termites, and also attends aphides and scale-insects on plants.

(S.A.M., R.M., G.A. colls.)

T. (XIPHOMYRMEX) HUMBLOTI, Forel, var. VICTORIENSIS, Forel.

Grandidier Hist. Madagasc. 20, p. 154, 1891.

(Variety) Ann. Soc. Ent. Belg., vol. 57, p. 120, ♀, 1913.

♀. 3·2–3·8 mm. Piceous, head slightly reddish, legs, mandibles, and antennae ferruginous. Not unlike *Weitzaeckeri*, differing from it in the following characters:

The head is dull and much more finely striate, the striae becoming effaced towards the occiput; the spaces between the striae are very densely and finely rugulose or reticulate. The mandibles are more strongly striate. The pro-mesonotal suture is faintly indicated, the meso-epinotal suture well defined and deep. The pro-mesonotum is smooth and shining, except the margins, which are feebly punctured. The pronotum has a rounded boss on each side at the posterior corners. The dorsum of the epinotum is depressed, more or less excavated, sparsely and finely reticulate, sparsely rugose at the sides. The epinotal spines are less oblique than in *Weitzaeckeri*. The summit of the 1st node is more convex transversely and lengthwise, and lacks the impressed lines present in the other species. The 2nd node is also more convex and thicker above, the anterior and posterior faces being separated by a convex dorsal face (this is actually only a continuation in the horizontal direction of the anterior face). In the smaller forms (taken from a different nest to that of the larger), the sculpture extends partly over the mesonotum.

♀ (hitherto undescribed). 4.5 mm. Thorax paler than in the ♂, more castaneous brown. Pronotum widely exposed above at the shoulders, which are rounded. Mesonotum smooth and shining in its anterior third, the posterior two-thirds longitudinally striate; the scutellum very shallowly striate. Epinotum longitudinally striate at the sides and in the middle of the dorsum; the latter very steep, almost in the same plane as the declivity. Epinotal spines horizontal, stouter and less divergent than in the ♂. Nodes thinner and wider. Wings tinged with brownish-yellow, nervures and stigma pale yellow. Otherwise like the ♂.

♂ (hitherto undescribed). 4.4 mm. Head brownish-black, the area in front of the eyes dirty yellow. Thorax and nodes dark reddish-brown, the sides of the scutellum, the clathrate groove between the latter and the mesonotum, and the metanotum dark yellow. Abdomen piceous. Legs, antennae, and mandibles pale yellow, the femora slightly fuscous. Head and sides of the epinotum dull, the rest of the body shining. Head closely and finely reticulate, with a few striae radiating from the ocellar area. Mesonotum smooth, except in the middle behind the forks of the Mayrian furrows, where it is shallowly and longitudinally striate. Scutellum feebly striate, a space in the middle smooth. Epinotum very finely reticulate, feebly striate at the sides; the dorsum is as long as the declivity and has a median Λ -shaped excavation with a dentiform ridge on each side of the same. The 1st node of the petiole more or less cuneiform, the posterior-dorsal face as long as wide; the 2nd node is half as wide again as the 1st,

one-third wider than long, the dorsal surface much flatter than in the ♀, the posterior half of the sides parallel. The eyes are large and occupy the anterior half of the sides of the head. The scape extends back as far as the anterior ocellus, and is a little shorter than the 2nd joint of the flagellum.

Victoria Falls, nesting in very moist and rotten wood, and under moss. (S.A.M., R.M., G.A. colls.)

T. (XIPHOMYRMEX) FOSSULATUM, Forel. (Plate VII, figs. 107, 109)

Ann. Soc. Ent. Belg., vol. 54, p. 428, ♀, 1910.

♀. 2.2-2.7 mm. Castaneous, thorax, nodes, and base of abdomen paler, more yellowish-brown. Legs, antennae, and mandibles yellowish-brown. Pubescence very sparse, present only on the antennae and tibiae. Pilose hairs absent, except on the clypeus. Entirely smooth and shining. Head and thorax sparsely and irregularly punctured with wide and shallow pits, more sparsely on the thorax than on the head, the latter almost impunctate anteriorly. Head, excluding the mandibles, a little wider than long, feebly narrowed in front and behind, the posterior margin straight. Eyes large, placed in the middle of the sides. Frontal carinae widely divergent behind, prolonged back as sharp ridges to the posterior fourth of the head, forming distinct demisclerites which are smooth and deep, and hold the basal three-fourths of the scapes. The basal half of the scrobe is delimited below by a longitudinal ridge. Clypeus short, the anterior margin denticulate, carinate in the middle, the carina extending back over the well defined and triangular frontal area. Mandibles smooth, sparsely punctured, tridentate, the anterior pair of teeth close together and separated from the third tooth by a wide space. Scapes extending back as far as the occipital margin, 2nd-7th joints of the flagellum wider than long, the club thick. Thorax as wide in front as it is long, flat above, except the pronotal shoulders, which are depressed. The pronotum bears an angular prominence, somewhat obtuse, on each side behind the middle. Pro-mesonotal suture feebly indicated; the mesoepinotal obsolete above. Dorsum of epinotum impunctate, quadrate, submarginate. Epinotal spines long, divergent, acute, as long as the interval between their bases, directed steeply upwards. Episternum with a small rounded lobe on each side. Declivity marginate at the sides. First node of the petiole cuneiform, with a vertical anterior face, and a horizontal dorsal face, the margin between the two faces rounded, the peduncle very short, hardly differentiated from the node. Second node rectangular, wider than long, as long as and a little wider

than the 1st node; seen from the side, the anterior face is convex, the dorsal face shorter than the anterior. Abdomen round. Femora and tibiae rather swollen.

Willbrook, Natal. (Wroughton.)

This species is quite unlike our other two, and is easily recognised by the form of the mandibles, the clypeus, the peculiar puncturation, and the compact form.

(G. A. coll., ex B.M. coll.)

SUBGENUS DECAMORIUM, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 121, 1913.

Characters.

♀ and ♀. Antennae 10-jointed. Lateral ridges of the clypeus obsolete. Tibiae and femora very strongly swollen. Scrobes well defined and deep.

♂. Antennae 10-jointed.

T. (DECAMORIUM) DECEM, Forel. (Plate VIII, fig. 111.)

Ann. Soc. Ent. Belg., vol. 57, p. 121, ♀, 1913.

♀. 3-3.5 mm. Head, thorax, and nodes castaneous brown, the head, especially the anterior half, lighter; nodes darker. Abdomen piceous. Legs, antennae, and mandibles dark yellowish-red, the femora somewhat brownish-red. Pilosity and pubescence almost entirely absent, excepting a very short and sparse pubescence on the legs and antennae. Very shining, sides of epinotum slightly dull. Head, dorsum of thorax, and the nodes sparsely, irregularly, but deeply punctured; the sides and front of the head, excepting the clypeus and the sides of the mesothorax, longitudinally rugose. Sides of epinotum closely reticulate-punctate, the declivity transversely striate. The sides of the prothorax and the mesosterna smooth and shining. The apical half of the dorsum of the epinotum rugulose. Nodes sparsely punctured, also the abdomen, but much more finely so.

Head rectangular, parallel-sided, excluding the mandibles almost one-third longer than wide, the posterior margin slightly concave in the middle. Eyes large, placed in the middle of the sides. Frontal carinae wide apart in front, moderately divergent for a short distance behind the clypeus, thence parallel and prolonged back to the posterior seventh of the head, forming the upper boundary of a deep and smooth scrobe. Scapes curved near the base, broad, flattened, not reaching

the extremity of the scrobe; 2nd-8th joints of the flagellum wider than long, the 2nd-6th almost half as wide again as long, the apical joint one-third longer than wide. The flagellum is rather thick and short, not much longer than the scape. Median area of clypeus almost vertical in front, the anterior margin feebly emarginate in the middle. Mandibles curved, smooth and shining, very finely and sparsely punctured, armed with 5 widely spaced teeth; between the posterior pair of teeth there are 2 or 3 denticles. Thorax narrower than the head; pro-mesonotal suture faintly indicated, meso-epinotal deep. Pro-mesonotum feebly convex longitudinally and transversely, one-third longer than wide in front. Shoulders of pronotum slightly rounded, almost rectangular. Dorsum of epinotum moderately convex lengthwise, one and a half times longer than wide; epinotal teeth short, triangular, shorter than the interval between their bases, very slightly divergent, directed obliquely upwards. Declivity of epinotum a little shorter than the dorsum, vertical, sharply marginate at the sides. Episternal teeth shorter than the epinotal, wider than long. Peduncle of the petiole shorter than the node; the latter narrow and high, one-fourth longer than wide, the anterior and posterior faces subvertical, the dorsal face strongly convex. Second node semi-circular, widest behind, two-thirds wider than the 1st, and a little wider than long, the sides oblique and convex. Abdomen oval, nearly one-half as long again as wide. Tibiae and femora strongly swollen and slightly flattened from front to back.

♀ (hitherto undescribed). 4-4.1 mm. Very similar to the ♀. Eyes hardly larger than in that sex, ocelli small. Pronotum narrowly exposed above in the middle, widely so at the sides, the shoulders as in the ♀. The lateral margins of the pro- and mesonotum almost parallel as far as the tegulae. Mesonotum sparsely and strongly punctured, flattened. First node a little shorter than in the ♀. Wings slightly fuscous, nervures pale brownish-yellow. Otherwise like the ♀.

♂ (hitherto undescribed). 3.7 mm. Black, the apical half of the abdomen dirty brownish-yellow, tarsi pale yellow, the rest of the legs pale brown, antennae and mandibles yellow. Head subopaque, closely rugulose. Epinotum and sides of the thorax, and the posterior half of the 1st node more or less rugulose and reticulate, nitidulous. The mesonotum and scutellum sparsely and strongly punctured, also faintly striate in parts. Abdomen smooth and shining. Head high behind and vertically truncate behind the ocelli, the brow of the truncation rounded; the posterior margin is continued round the sides as a trenchant ridge, so that the posterior angles, looked at from

above, appear almost dentiform. Head about as long as wide across the eyes. The latter large, occupying the anterior half of the head, but not touching the base of the mandibles. The scapes extend back almost as far as the anterior ocellus, a little shorter than the 2nd joint of the flagellum. Anterior half of mesonotum very convex transversely and lengthwise; Mayrian furrows fairly deep in front. Dorsum of epinotum oblique, at least twice as long as the declivity, merging gradually into the latter. Peduncle of the petiole with a blunt prominence below, at the extreme base; the node depressed and narrow, its anterior and posterior faces forming an obtuse angle when seen in profile. Second node campaniform, narrowed in front, about as long as it is wide behind. Legs thin. Wings as in the ♀.

Nesting in sandy soil, and forming fairly populous communities; a very slow and timid insect.

Redbank, Nyamandhlovu, and Hillside, Bulawayo, S. Rhodesia; Hartley, S. Rhodesia (H. B. Maufe). The latter are much darker, almost brownish-black, but otherwise similar. (S.A.M., R.M., G.A. colls.)

Var. *ULTOR*, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 217, ♀, 1913.

♀. 2·7–3·1 mm. Very similar to the type of the species but smaller. The 2nd node is narrower, as long as wide. The colour is darker, and the puncturation much more scanty and finer. The 1st node is not so high as in the type species, and the epinotal teeth are shorter, not longer than their basal width.

Shiloh, S. Rhodesia. Nesting near and in the nests of *Paltothyreus tarsatus*. (R.M., G.A. colls.)

GENUS RHOPTRMYRMEX, Mayr.

Ann. K.K.N.H. Mus. Wien., vol. 16, p. 18, 1901.

characters.

♀. Antennae 12-jointed; maxillary palpi 3-jointed, labial palpi 2-jointed. Head wider behind than in front, the sides convex. Frontal carinae short; scrobes entirely absent. Thorax short and stout; epinotum armed or unarmed (unarmed in all our species). First segment of petiole usually strongly compressed transversely, at least in the anterior half, deeper than wide, the peduncle generally indistinct. Second node globose or much wider than long, and much wider than the 1st. Femora not swollen.

♀. Antennae 12-jointed. Somewhat slender and having the facies of the ♂ sex. The four known ♀ ♀ of this genus differ so greatly in general features that I am unable to define the generic characters for this sex. Mayr's definition for this sex applies only to *globulinodis*.

♂ (*globulinodis*). Antennae 10-jointed, the 2nd joint of the flagellum long, as in *Tetramorium*. For the rest, see description below.

Key to the ♂ ♀ of Rhoptromyrmex.

- (4) 1. Second node of petiole much wider than long.
- (3) 2. Posterior margin of the head distinctly concave; meso-epinotal suture feeble; smaller species, 3-3.3 mm. *transversinodis*, Mayr.
- (2) 3. Posterior margin of the head straight or nearly so; meso-epinotal suture well defined although shallow; larger species, 3.4-3.9 mm.
Steini, Forel.
- (1) 4. Second node of petiole not much wider than long, subglobose.
globulinodis, Mayr.

R. GLOBULINODIS, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 16, pp. 18-22, ♂, ♀, ♂, 1901.

♀. 3-3.3 mm. Pale reddish-brown, the mandibles, legs and antennae brighter, more yellowish-red. Pubescence decumbent, very scanty, a little longer and more abundant on the legs and antennae than elsewhere. Pilose hairs absent. Smooth and very shining. Head very sparsely and finely punctured, the anterior angles finely and longitudinally striate; the striae end at about the level of the anterior margin of the eyes, and a few striae curve round the antennal sockets. Just behind the clypeus, and bordering the basal portion of the frontal carinae, there are also some short and fine striae. The rest of the head, the pro-mesonotum, nodes and abdomen smooth. On the head and pro-mesonotum a microscopic and very shallow rugulosity is noticeable in some lights. Sides of the thorax, and the epinotum very finely rugulose, duller than the rest.

Head, excluding the mandibles, very little longer than wide, the sides convex, the posterior margin fairly deeply concave, not much narrower in front than behind, concave above, flat below. Eyes not large, placed in the middle of the sides. Frontal carinae hardly divergent, not extending back quite as far as the middle of the vertex. Clypeus rather flat, the anterior margin moderately convex, not carinate. Frontal area shallow, indistinct. Mandibles smooth and shining, the external margin convex, the masticatory margin den-

ticulate, with a large tooth at the apex. Scape extending back a little beyond the posterior fifth of the head, 3rd-8th joints of the flagellum wider than long, the 3-jointed club not very thick, longer than the rest of the flagellum. Anterior margin of pronotum convex, the shoulders very round. Pro-mesonotal suture very feeble or obsolete. Thorax strongly constricted between the meso- and epinotum, the meso-epinotal suture narrow and distinct. The mesonotum has a shallow and transverse impression in the middle. The dorsum and declivity of the epinotum, seen in profile, form a continuous and low curve; the declivity marginate at the sides, the raised margins being continued over the dorsum almost to its base; the dorsum a little longer than the declivity.

The 1st node is much longer from above to below (*i. e.* deeper) than it is wide above, compressed and almost lamelliform. The nodal portion of the segment, seen from above, is nearly hemispherical, narrower in front than behind, as long as wide behind. Second node more or less transversely oval, or subglobose, a little wider than long, wider than the 1st. Abdomen oval.

♀. 3.5 mm. Brown, mandibles, antennae and legs paler. Pilosity abundant, composed of long and short hairs intermixed. Antennae, legs, sides and vertex of head finely pubescent. The hairs on the abdomen are exserted and very long, shorter and less abundant on the thorax. On each side of the head, behind and between the eyes and the median line, there is a very smooth and shining area, which is tumid in the middle. The rest of the head finely striate, except the clypeus, which is smooth, and the posterior and lateral margins above, which are strongly but sparsely punctured. Thorax above strongly and sparsely punctured, the posterior half of the mesonotum almost impunctate. Pronotum closely and fairly finely striate lengthwise, sides of epinotum sparsely striate and punctate, the punctures large. Nodes and abdomen smooth and shining, finely and very sparsely punctured.

Head high in the middle, sloping steeply downwards on each side of a longitudinal median area which extends from the clypeus to the posterior ocelli; behind the latter it is also fairly steep. The head is wider just in front of the eyes than it is behind them or across the clypeal portion, the occipital margin deeply emarginate, more angularly so than in the ♀, the lateral angles rounded. Eyes placed a little in front of the middle of the sides. Ocelli small and close together; for a short distance in front of the anterior ocellus there is a smooth and shining depression. Frontal carinae subparallel, extending back as far as the posterior ocelli. The scapes extend back equally as far. The

thorax is very compressed, as though it had been held on each side and pinched. It is therefore narrow above and much deeper than wide, the sides almost vertical. The pronotum is barely visible from above. The mesonotum and scutellum almost flat, except in front and behind, where they are slightly curved downwards. Seen from above, their outline forms an ellipse, the major axis of which is two and a third times longer than the minor. Dorsum of epinotum obsolete, the upper surface of the epinotum forming a steep and continuous line from base to apex. This upper surface is margined at the sides by a longitudinal ridge, excavated between them, more shallowly so above than below. The petiole resembles that of the ♂, but is narrower and longer. Seen from above, the 1st segment is pyriform, with a long stalk in front; the 2nd node campaniform, widest behind, and a little longer than wide. Abdomen narrowed towards the base, the basal margin concave. The 1st segment forms more than half the abdomen, and has above a semi-oval and flattened or depressed area. Wings with 1 cubital cell and 1 discoidal, the radial cell open.

The above descriptions of the ♂ and ♀ are drawn up from specimens lent to me by Dr. Brauns, who originally discovered the species.

“♂. 3.5 mm. Shining, brown, the mandibles, antennae and legs yellow, coxae and femora more yellowish-brown. The pilosity much less abundant than in the ♀. Mandibles and also the head fairly smooth, the cheeks with a few longitudinal striae, the sides of the head behind the eyes fairly finely and longitudinally rugulose. The pronotum and the lateral margins of the mesonotum in front of the tegulae finely rugose, mesonotum otherwise smooth; the scutellum finely and longitudinally rugose, with a more or less distinct longitudinal groove; the epinotum finely reticulate rugose. Wings as in the ♀. The smooth petiole like that of the ♀, but the 1st node is lower. Abdomen smooth. . . . Mandibles as in the ♂ and ♀, but narrower. The head, including the mandibles, is more or less pentagonal, the apex of the closed mandibles, the eyes and the posterior corners forming the rounded angles. The clypeus is moderately arched and arcuately produced in front, wide behind, not prolonged far back between the frontal carinae, the lateral portions having an angular posterior edge opposite the antennal sockets. Frontal carinae short, parallel and narrow, the sockets of the antennae being freely exposed. Antennae 10-jointed, the scape extending back almost to the posterior ocelli; the flagellum fairly long, the 1st joint about twice as long as wide, the 2nd three times as long as the 1st, the succeeding joints all longer than wide (in three out of the four examples in my possession, the 2nd joint is more or less fused with the

3rd). Eyes moderately large, placed in the anterior half of the head. Behind the eyes the head is gradually narrowed towards the posterior angles, the posterior margin above truncate (hardly concave), distinctly and arcuately emarginate below and at the occipital foramen. Thorax unarmed, the mesonotum not overhanging the pronotum in front. The Mayrian furrows become less distinct before the middle of the mesonotum and before their point of junction. In front of, and parallel to the posterior margin of the mesonotum, there is a curved transverse impression, which is probably present in the living insect, even if not so deep. The scutellum is fairly strongly convex lengthwise, higher than the mesonotum, less rounded behind than in *Tetramorium*. The dorsum of the epinotum is long and fairly narrow, with a median longitudinal groove, oblique, merging arcuately into the much more inclined declivity; the latter marginate at the sides, the margins becoming stronger below. Wings as in the ♀. Legs thin and fairly long. Petiole as in the ♀. Port Elizabeth (Dr. H. Brauns)."

R. TRANSVERSINODIS, Mayr. (Plate VIII, figs. 112, 112a, 113, 113a.)

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 22, ♂, 1901.

♂. 3 mm. Brownish-ochreous; the tarsi, mandibles, and flagellum more reddish-yellow. Smooth and very shining. Sparsely and exceedingly finely punctured, the pubescent hairs arising from the punctures. Under a low magnification practically impunctate. Pubescence adpressed and very scanty, more abundant on the abdomen than on the head and thorax, longer and denser on the legs and antennae. The anterior angles of the head, between the eyes and antennal sockets, finely striate, much more finely so than in *globulinodis*. Very similar to that species, differing from it chiefly in the following characters:

The sides of the head are much more convex, the portion in front of the eyes narrowing gradually towards the clypeus. The posterior margin more deeply and widely emarginate, the posterior angles more prominent. The eyes are placed a little behind the middle of the sides. Frontal carinae shorter, wider apart and more divergent. Thoracic sutures faintly indicated above at the sides, obsolete in the middle. The mesonotum lacks the transverse impression which is present in *globulinodis*, and, seen in profile, the dorsum is not depressed between the meso- and epinotum. The chief distinction lies in the shape of the petiole. The 1st segment, seen in profile, has a short and vertical posterior face; the dorsal face is convex and passes

arcuately into the almost vertical anterior face. Seen from above, the nodal portion is much narrower, a little longer or as long as wide, the whole segment appearing gradually clavate. The 2nd segment is fairly convex lengthwise, much less so transversely, transversely oval, slightly more than twice as wide as long, and quite two and three-quarter times wider than the 1st.

♀ (hitherto undescribed). 3.4-3.5 mm. Brownish-black; the apical half of the abdomen paler, legs brown, paler at the articulations; tarsi and flagellum ochreous, mandibles reddish-brown. Shining, the abdomen and nodes a little less shining than the head and thorax. Club of antenna and the last two tarsal joints pubescent, the rest of the body entirely glabrous. The sculpture is very distinctive and remarkable. It consists of elongate, elliptical, and shallow pits, which have a silvery reflection, and give a false impression of containing flattened scale-like hairs, like those of *Tetramorium setuliferum*. However, under a high magnification (100 diameters) it can be seen that such scale-hairs are absent, the silvery appearance being due to the shape of the pits and their polished surfaces. This puncturation is fairly dense and regular on the head and abdomen, larger and more scanty on the thorax. It also extends over the legs and antennae, the pits becoming increasingly more abundant, narrower, and longer towards the apices of those parts, and near the ends of the limbs bearing fine, flattened, pubescent hairs.

Head much higher behind than in front, very convex lengthwise, the posterior margin widely concave, the posterior angles rounded and projecting prominently outwards and backwards. The vertex is narrow and convex transversely, not flat, as in *globulinodis* ♀; the sides very steep, much more so than in *globulinodis*, and shallowly concave above the posterior angles. Seen from above, the sides of the head, from the posterior angles forwards to the eyes, are straight or even a little concave, in front of the eyes moderately convex. The eyes are fairly large, placed a little in front of the middle of the sides of the head. Ocelli smaller than in *globulinodis*. Frontal carinae wide apart, short, not extending beyond the antennal sockets. Anterior margin of clypeus moderately convex; frontal area shallow and equilateral. Mandibles very convex externally, the masticatory margin denticulate, with a larger apical tooth. The scape extends back about as far as the anterior ocellus. Mesonotum and scutellum flat transversely, nearly so longitudinally. The outline of the two parts together, seen from above, is roughly oval, one and three-fifths longer than wide. The posterior half of the scutellum slopes down-

wards and is concave transversely. The margins of the mesonotum, in front and at the sides, are rounded and project a little over the vertical sides and front of the pronotum. The sides of the meso- and epithorax are also vertical. The epinotum is very deeply excavated from near its base above to its apex below, in such a way as to leave a narrow wall on each side. Seen from above, only the edges of the walls can be seen, so that the epinotum appears almost bispinose. The declivity is margined by the downward continuation of the walls and is vertical (in *globulinodis* the dorsum and declivity are oblique, and only feebly marginate at the sides).

• First segment of the petiole very strongly compressed laterally, almost lamelliform except at the lower half behind, where it is a little wider. It is produced downwards and is deeper behind than in front, quite one and a half times deeper than long. Its dorsal surface is rounded transversely, very narrow, almost linear. The 2nd segment four times wider than long, and at least four times wider than the 1st, the anterior margin concave, narrower behind than in front. Basal half of the 1st abdominal segment depressed in the middle, the lateral angles thereby rendered prominent and forming a more or less elongate tubercle at each corner. Abdomen ovate, not much longer than wide, rather flat above. •Wings hyaline, nervures very pale.

The structure of the nodes and epinotum may be made more apparent by reference to the figures on Plate VIII.

Port Elizabeth and Bothaville (Dr. H. Brauns); Pretoria, ♂♂ and ♀♀ (C. K. Brain); type of the ♀ in my collection. (S.A.M., R.M., G.A. colls.)

R. STEINI, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 122, ♂, 1913.

♂. 3.4–3.9 mm. Dark yellowish-brown, the posterior half of the head and the thorax darker, legs, antennae, and mandibles paler, the latter and the flagellum somewhat reddish. Very similar to *transversinodis*, but larger and darker, differing from it also in the following characters:

Very finely and sparsely punctured, the head also very finely rugulose. The pubescence longer and a little more abundant. The sides of the head are much more convex, the posterior margin less emarginate, the posterior angles less prominent and wider. Promesonotal suture obsolete, the meso-epinotal well defined. The dorsum of the epinotum is proportionately longer and more convex lengthwise, passing into the declivity by a much shorter and less oblique curve than in *transversinodis*. The 1st segment of the petiole,

seen from above, is much wider, more pyriform than clavate; the nodal portion is a little wider than long. The 2nd node is transversely oval, two and a half times wider than long and about twice as wide as the widest part of the 1st, hardly thinner at the sides than in the middle.

Ladismith, Cape Prov. (Dr. H. Brauns.) (S.A.M., R.M., G.A. colls.)

GENUS TETRAMYRMA, Forel.

Rev. Suisse Zool., vol. 20, p. 766, 1912.

Characters

♂. Antennae 12-jointed, club 3- or 4-jointed. Frontal carinae divergent, short, not forming scrobes. Lateral portions of the clypeus not ridged posteriorly, the median area more or less trapezoidal, produced fairly far back between the frontal carinae. Frontal area distinct. Mandibles triangular, 5-dentate. Thorax unarmed; the sutures visible but feeble. First node of petiole pedunculate, both nodes large and round. Femora thin at the base, moderately swollen from the basal fourth onwards.

♀. Antennae 12-jointed. Ergatoid. Eyes larger than in the ♂. Ocelli absent. A more or less distinct scutellum present. Nodes wider and less convex above. Abdomen dilated, larger than in the ♂. Pilose (pilosity absent in the ♂).

♂. Unknown.

T. BRAUNSI, Forel. (Plate VII, fig. 86.)

Loc. cit., p. 767, ♀.

Ann. Soc. Ent. Belg., vol. 57, p. 122, ♀, 1913.

♀. 5-6 mm. Black, thorax, nodes, and mandibles dark red, the nodes darkest, the bases of the femora and tibiae dark rusty red. Tarsi and antennae with a sparse and decumbent pubescence, the rest of the body glabrous. Subopaque. Head, thorax, and nodes coarsely rugoso-reticulate, the rugae emphasised longitudinally on the head and pro-mesonotum; on the nodes and epinotum the sculpture is finer and closer, although still fairly coarse. The spaces between the rugae is finely reticulate. Abdomen very finely, closely, and longitudinally striate, also partly reticulate. Legs and scapes sparsely punctate.

Head rectangular, a little longer than wide, slightly narrower in front than behind, the posterior angles rounded, the posterior margin moderately convex, the sides almost straight. Eyes fairly large, placed just in front of the middle of the sides. Median area of the clypeus longitudinally striate, somewhat produced in front, the anterior margin straight, with a longitudinal and shallow impression in the middle. Mandibles sharply striate and sparsely punctured, armed with 5 large and obtuse teeth, the external margin feebly convex. Frontal carinae not extending back beyond the level of the anterior margin of the eyes. Frontal area triangular, depressed, and shining. Scapes not quite reaching the posterior margin of the head; 4th-7th joints of the flagellum as wide as long, all the rest longer than wide. The wide pronotum has a distinct neck in front, the anterior margin above the latter very convex. In most specimens the pro-mesonal suture is very feeble, almost obsolete. The thorax is widest across the posterior third of the pronotum, behind that point it narrows gradually towards the meso-epinotal suture. Epinotum rounded. The dorsum of the thorax, seen in profile, forms two rounded bosses or convexities which are separated by a deep depression at the meso-epinotal suture. Epinotum unarmed, the dorsum widest in the middle, as long as the declivity, the latter not very steep, strongly and transversely rugose; an episternal lobe on each side below. Peduncle of the petiole ending in a small tooth below. The 1st node twice as long as its peduncle, subglobose, as wide as long, the anterior face nearly vertical. Second node wider than the 1st, nearly half as wide again as long, highest behind the middle, the sides rounded. Abdomen oval, truncate at the base.

♀. 6.5-7 mm. Ergatoid or pseudogyne. A fairly abundant pilosity is present, composed of pale, thin, erect, and whitish hairs. Abdomen and legs with a decumbent and fairly sparse pubescence. Eyes a little larger than in the ♂. Thoracic sutures more distinct; a scutellar portion of the mesonotum faintly defined. Dorsum of epinotum impressed transversely in the middle, the junction with the declivity more abrupt than in the ♂; these features are somewhat masked by the very coarse sculpture. Declivity wider than in the ♂. Nodes and abdomen wider than in the ♂, the former rather less convex above. The sculpture is even more coarse, and the rugae on the head diverge outwards towards the lateral angles behind. Otherwise like the ♂.

Willowmore, Cape Prov. (Dr. H. Brauns.) (S.A.M., R.M., G. A. colls.), type of ♂ in my collection,

TRIBE MERANOPLINI, Emery.

Including the following S. African genera: *Calyptomyrmex*, Emery;
Meranoplus, Smith; and *Dicroopsis*, Emery.

GENUS CALYPTOMYRMEX, Emery.

Ann. Mus. Civ., Genoa, vol. 25, p. 147, 1887.

Forel, Mitth. N.H. Mus., Hamburg, vol. 18, p. 50, ♀, ♂, 1901.

Characters.

♀. Antennae 12-jointed, club 3-jointed, 2nd-8th joints of flagellum much wider than long. Scape thin at the base, flattened and dilated over the apical two-thirds. Clypeus narrow, the median area vertically truncate in front, the brow of the truncation strongly bidentate. Frontal carinae strong, with very deep and complete scrobes below. Eyes small. Pro-mesonotal suture obsolete, the meso-epinotal distinct. Thorax stout and short, the mesonotum feebly bidentate behind, the epinotum oblique, much lower than the mesonotum, also feebly bidentate. Petiole pedunculate anteriorly, both nodes transversely oval. Abdomen round, the 1st segment forming the whole of the dorsal surface. Pilosity partly composed of spatulate hairs.

The above characters of the ♀ refer only to our single species, *C. Arnoldi*, Forel.

“♀. This sex, as exemplified in *C. Schraderi*, Forel, an Australian species, does not differ much from the ♀. The eyes are rather small, the pronotum somewhat truncate in front, the epinotum bidentate. The thorax is not quite so wide as the head. The pilosity consists of spatulate and clavate hairs, as in the ♀.

“♂. Wings as in *Meranoplus*, 1 cubital and 1 discoidal cell, the stigma large and round, the radial cell open. Head relatively large, convex behind. Clypeus with lateral carinae, without teeth. Frontal carinae of the usual form, not forming scrobes.” Mayrian furrows present on the mesonotum. Nodes of petiole more or less round.

C. ARNOLDI, Forel. (Plate VIII, figs. 114, 114a.)

(*Dicroaspis*), Ann. Soc. Ent. Belg., vol. 57, p. 115, ♀, 1913.

♀. 2.6 mm. Reddish-brown, the thorax and nodes darker, more dark brown. Legs, antennae, and mandibles reddish-yellow. The colour is somewhat masked by the pilosity, which is of an ochreous colour, and consists of short clavate and spatulate hairs. The former

are erect, and are mainly confined to the margins of the frontal carinae and the legs (the shape of these and of the spatulate hairs is the same as in *Strumigenys*, see Plate VIII, figs. 114*a*, 117*a* and *b*). Head fairly closely and longitudinally rugose on the anterior half, becoming more reticulate-rugose on the posterior half, the spaces between the rugae finely reticulate, the scrobes very shallowly and very finely reticulate, almost smooth. Pro-mesonotum coarsely rugoso-reticulate, the spaces between more finely reticulate or rugulose. Epinotum, sides of thorax, and nodes finely and closely reticulate-punctate. Abdomen alutaceous, faintly shining, the rest of the body dull.

Head trapezoidal, considerably narrowed in front, the posterior angles widely rounded, the posterior margin straight or slightly convex. Frontal carinae widely divergent, dilated horizontally outwards, extending back as far as the posterior fourth of the head, where they curve downwards and then continue forwards as a fine line, forming the upper and lower margins respectively of deep and wide scrobes, which receive the whole of the folded scape and flagellum. The clypeus is narrow and projects forwards, its upper surface is depressed, slanting downwards, feebly carinate in the middle. The corners of the anterior margin of the upper surface are produced into sharp teeth, the space between the teeth strongly concave. Below the teeth, the front of the clypeus is vertical or even inclined slightly inwards, convex transversely. The teeth of the clypeus, seen from above, project well beyond the middle of the closed mandibles. The latter closely striate, sparsely punctured, armed with two sharp apical teeth, the rest of the masticatory margin merely denticulate. Frontal area triangular and shining. Eyes composed of about 10 or 12 facets, placed behind the middle of the sides and below the scrobe. Scape widened and flattened over the apical two-thirds; 2nd-8th joints of the flagellum very short, at least three times wider than long, the club acuminate, four-fifths longer than the rest of the flagellum. Pro-mesonotum wide, narrowed behind, as wide in front as it is long; pronotal shoulders narrowly rounded, prominent; posterior margin of mesonotum furnished with a small tooth on each side (these are not easily seen, being partly obscured by the spatulate hairs). Dorsum of epinotum nearly flat, quadrate, as wide as long, very oblique, armed with two small, pointed, and triangular teeth. The declivity a little shorter than the dorsum, fairly steep, marginate at the sides, with an episternal lobe on each side below. The peduncle of the petiole is as long as the node. The latter two-thirds wider than long, rounded above, the anterior and posterior faces vertical, the posterior face feebly convex transversely and concave

from above to below. Seen from above, the node is transversely oval. Second node also transversely oval, as wide as the 1st, two-thirds wider than long, the ventral surface armed with a small tooth on each side in front. Abdomen truncate in front, the sides very convex, a little longer than wide.

Bulawayo, under stones, very rare. Occasionally found singly in nests of Ponerine ants, where its presence is probably accidental. I have never found more than half a dozen together in one place. It is a very slow moving ant, and on account of its colour not easily seen even at close quarters. The 2nd-8th joints of the flagellum are so exceedingly short that they can be resolved only under a magnification of at least 80 diameters, and it is therefore not surprising that this species was originally placed by Dr. Forel under *Dicroaspis*.

(S.A.M., R.M., G.A. colls.)

GENUS DICROASPIS, Emery.

Ann. Soc. Ent. Belg., vol. 52, p. 185, 1908.

Characters.

♂. Antennae 11-jointed, club 3-jointed, the scape swollen near the middle. Clypeus as in *Calyptomyrmex Arnoldi*. Deep scrobes present. Head much narrower in front than behind, more or less triangular. Pro-mesonotal suture absent, meso-epinotal distinct. Epinotum armed with two small teeth. Abdomen much longer than wide, as in the genus *Cataulacus*. Spatulate hairs usually present.

♀. Scutellum overhanging the epinotum. Nodes wider and abdomen longer than in the ♂. Otherwise similar, except the usual sexual differences in the structure of the thorax, etc.

D. CLAVISETA, Santschi.

Göteborgs Kungl. Vetensk. och Vitterh. Handl. XV, 2, p. 27, ♀, 1914.

“ ♀. 2 mm. Brownish-red. Head and dorsum of thorax darker. Abdomen blackish-brown. Dull. Head and pro-mesonotum coarsely and longitudinally rugose. The rugae are slightly divergent towards the back of the head, and convergent behind on the thorax. The spaces between the rugae are more finely rugose and covered with large punctures, shining at the bottom, each one giving rise to an erect clavate hair. The sides of the thorax, the epinotum and both nodes finely reticulate and punctate. On the thorax and abdomen the clavate hairs are fairly long and outstanding, also erect but shorter on

the head, very short and oblique on the legs. Pubescence indistinct on the body, abundant on the antennae, sparse on the legs. Head a little longer than wide, the hind margin feebly emarginate, the posterior angles rounded; the sides straight, converging towards the mouth. Eyes placed in the middle of the sides, composed of 8 or 9 facets (3 to 4 along the diameter). Clypeus reticulate, fairly shining, subvertical, produced forwards into a bidentate lobe strongly emarginate in the middle. Frontal carinae as in *D. cryptocerus*, Emery, widely but shallowly emarginate in the middle of the sides. Mandibles smooth, feebly punctured, fairly shining, with 2 apical teeth, followed by 4 or 5 denticles. Scape cylindrical, slightly dilated in the apical half. First joint of the flagellum as long as the four following joints taken together; 2nd-6th joints three times wider than long. Last joint of the club longer than the two preceding united, the latter shorter than wide. Front of the pronotum transverse, the sides convergent behind, submarginate and only feebly arcuate. Dorsum of the epinotum strongly marginate, concave transversely, one-third longer than wide and one-third longer than the declivity. The angles of the epinotum armed with a small tooth. First node nearly twice as wide as long or as high, convex above, the two faces vertical, the anterior face almost as long as the peduncle, the upper margin of the latter very oblique in front. Second node transversely oval, half as wide again as the 1st, nearly twice as wide as long. Much wider and more convex above than below, furnished below with a blunt tooth. Abdomen ovoid, slightly dilated in front."

Pietermaritzburg (Traegaordh).

GENUS MERANOPLUS, Smith.

Trans. Ent. Soc. London, series 2, p. 224, 1854.

Characters.

♂. Antennae 9-jointed, the club 3-jointed, the scape swollen in the apical half. Distinct and deep scrobes present, receiving the whole of the folded antennae. Eyes prominent and convex. Head usually very steep in front. Frontal carinae wide apart, divergent, prolonged backwards as the upper boundaries of the scrobes. Thorax generally short; the pro-mesonotum forms a single disc, and overhangs the epinotum behind. The anterior and posterior angles of the pro-mesonotum usually bidentate or bispinose. Epinotum vertical or very steep, generally bispinose, sometimes unarmed, the dorsum and declivity not differentiated, the upper surface of the epinotum forming

a single plane. First node usually cuneiform. Second node cuboid or globose. Pilosity long, abundant and woolly.

♀. Antennae 9-jointed. Pro-mesonotum not spined nor dentate. Wings with 1 cubital, 1 discoidal and 1 closed radial cell.

♂. Antennae 13-jointed, the scape short, the 2nd joint of the flagellum not much longer than the scape. Mayrian furrows usually well defined. Nodes flattened, not cuneiform, sometimes with the anterior angles subdentate.

The ants of this genus are slow and timid insects, often feigning death when handled. The nests of all our S. African species are placed in the ground, usually with several entrances, which are surrounded by irregular masses of excavated material. As far as my observations go, they appear to be mainly carnivorous in their diet, but are also fond of sugary substances, and attend aphids and coccids on plants.

✓
Key to the ♂♂ of Meranoplus.

- (4) 1. Epinotum unarmed.
- (3) 2. Posterior margin of mesonotum feebly festooned . . . *inermis*, Emery.
- (2) 3. Posterior margin of mesonotum deeply festooned . . . *nanus*, André.
- (1) 4. Epinotum armed.
- (10) 5. Mesonotum with short teeth at the posterior angles, much shorter than the epinotal spines.
- (7) 6. First node of petiole bispinose above . . . *spininodis*, Arnold.
- (6) 7. First node of petiole unarmed above.
- (9) 8. Lateral margins of pro-mesonotum deeply excised between the pro- and mesonotum, strongly lobate on each side of the excision; head longitudinally striate anteriorly . . . *excisus*, Arnold.
- (8) 9. Lateral margins of the pro-mesonotum feebly excised, hardly lobed on each side of the excision; head reticulate-rugose in front and behind . . . *Peringueyi*, Emery.
- (5) 10. Mesonotum spined at the posterior angles, the spines as long as those of the epinotum.
- (12) 11. Abdomen dull . . . *Simoni*, Emery.
- (11) 12. Abdomen more or less shining.
- (14) 13. Pro-mesonotal suture visible, linear . . . var. *suturalis*, Forel.
- (13) 14. Pro-mesonotal suture obsolete.
- (16) 15. Abdomen very shining; pro-mesonotum paler than the head and abdomen, more or less yellowish-red . . . var. *springvalensis*, Arnold.
- (15) 16. Abdomen moderately shining; thorax as dark as the rest of the body, or nearly so . . . var. *nitidiventris*, Mayr.

I have not seen *inermis*, Emery, which has the epinotum unarmed, like the race *nanior*, Forel, of *nanus*, André. I have some specimens which have been named as this race by Dr. Santschi, but they do not

agree in size with Forel's description, being 2.5 mm. long instead of 1.9. The two species, *inermis* and *nanus* with its varieties, are evidently very closely allied, and in the circumstances, it appears safest to repeat here the authors' original descriptions.

M. INERMIS, Emery.

Ann. Soc. Ent. France, vol. 63, p. 41, ♂, 1895.

"♂. 2-2.2 mm. Fuscous, with an abundant but not long pilosity, scantier on the legs and thorax than elsewhere; head and thorax coarsely reticulate, less shining than the abdomen, which with the petiole is very shining and punctate; disc of pro-mesonotum transverse, the anterior angles acute, obtusely 6-lobate posteriorly; epinotum unarmed; nodes of petiole cuneiform."

"Very closely allied to *M. nanus*, André, from which it differs more especially by the absence of the epinotal spines. The pro-mesonotum is a little shorter, the festoons or lobes of the posterior margin less prominent. The sculpture and pubescence are identical. The nodes of the petiole are still more squamiform. Makapan (Simon)."

M. NANUS, André.

Rev. d'Ent., 2, p. 55, ♂, 1892.

"♂. 2.75-3.25 mm. The pro- and mesonotum together form a transverse rectangle, much wider than long; the anterior angles of the pronotum acute, the sides straight, separated from the mesonotum by narrow and deep lateral excisions, and by a suture which is superficial but distinct. Mesonotum shorter than the pronotum and of the same width; its posterior angles are dentiform but blunted, and its posterior margin bears 4 short, obtuse and triangular teeth, of which the two exterior are a little larger than the internal pair. Epinotum armed with 2 small, acute and spiniform teeth. Petiole short, its two segments having the form of fairly high scales; the scale of the 1st segment, seen from the side, cuneiform, the summit very thin; the 2nd segment is hardly thicker at the base than at the summit, which is less trenchant and rounder. More or less dark reddish-brown, the legs and antennae testaceous, the abdomen nearly black behind. Head and thorax fairly shining, fairly strongly reticulate-rugose; clypeus, frontal area and the vertical face of the epinotum nearly smooth; 1st abdominal segment fairly coarsely and shallowly reticulate-punctate, the other segments nearly smooth. Pilosity whitish, long and abundant all over. Gaboon."

Race NANIOR, Forel.

Ann. Mus. Nat. Hong., vol. 5, p. 12, ♂, 1907.

“♂. 1.9 mm. Apart from its smaller size, this form differs from the type of the species by its sculpture, which is much more feeble everywhere, by the more obtuse lobes or denticulations of the margin of the thorax, by the thinner and more squamiform nodes, and by the shorter thorax, which is one and three-quarter times wider than long. The head is narrower than the thorax (equally wide in the type species). Epinotal spines entirely absent, the epinotum being absolutely unarmed. The woolly and abundant pilosity is a little shorter. Mto-ya-kifaru, East Africa.”

Specimens taken near the Victoria Falls have been named for me by Dr. Santschi as being of this race. Excepting their greater size, they agree well with the above description, but not more so than they do with Emery's description of *inermis* and with his figure of the same. Emery does not mention the pro-mesonotal suture, which is well defined in these specimens, and ends at each side in a deep pit, which appears to have been formed by the fusion of the opposed outer angles of a former excision.

(S.A.M., R.M., G.A. colls.)

M. SPININODIS, n. sp.

♂. 2.7-2.9 mm. Head, thorax, and nodes yellowish-brown, abdomen dark brown, legs, antennae, and mandibles ochreous-yellow. Pilosity pale yellowish, fairly long and abundant. On the legs it is short, oblique, and intermixed with a sparse pubescence. Head longitudinally rugose, the posterior fourth reticulate. Scrobes deep, smooth, and shining, faintly and vertically striate over their posterior half. Mandibles longitudinally striate, quadridentate. Thorax and 2nd node rugoso-reticulate, the reticulations on the node closer and finer than on the thorax. Declivity of the epinotum and the 1st node smooth and shining. Head and thorax moderately shining between the reticulations. Abdomen nitidulous, very finely reticulate or alutaceous; here and there the reticulations are closer and stronger, forming more or less rosette-like points. Head as wide behind as long, not much narrowed in front, the posterior margin convex, the posterior angles sharp. Eyes moderately large, placed behind the middle of the sides. The frontal carinae and the scrobes extend back as far as and end at the posterior angles. Median area of clypeus margined laterally by a raised line or carina, between them

are 2 or 3 shorter lines; the anterior margin is straight, slightly produced forwards. Club of antennae as long as the rest of the flagellum. Pro-mesonotum nearly one and two-thirds wider than long, not much wider in front than behind, only very slightly narrowed behind the pronotal region, shallowly incised in front of the mesonotal teeth. The latter are fairly acute, subparallel, a little longer than their basal width. The epinotal spines are very long, quite two and a half times longer than the mesonotal, and two and a half times longer than their width at the base, subparallel, acute, directed obliquely upwards. They are placed very close to the posterior margin of the mesonotum, so that the clathrate space between the latter and their bases (*i. e.* the dorsum of the epinotum) is very short.

First node of petiole cuneiform, the anterior face vertical, the posterior face nearly so; the trenchant dorsal edge of the node bears on each side a sharp and vertical spine, a little longer than wide at the base. The 1st node is slightly wider than the 2nd. The latter is subglobose; seen from the side it is somewhat flattened above, wider above than below, the anterior face inclined forwards, obtusely angulated below. Abdomen deeply emarginate at the base at its junction with the petiole.

This is a very distinct species, easily distinguished from all our other species by the bispinose 1st node of the petiole and the very long epinotal spines.

Hillside, Bulawayo. The entrance to the nest is a very small hole surrounded by a tiny mound of earth. (S.A.M., R.M., G.A. colls.); type in my collection.

M. EXCISUS, Arnold.

Proc. Rhod. Sc. Assn., vol. 13, part 3, p. 29, ♂, 1914.

♂. 3-3.3 mm. Head, thorax, petiole, legs, and antennae yellowish-brown, the head, scape, and club of antenna a little darker, abdomen brownish-black. The pilosity is very dense and composed of long pale hairs, more abundant than in *Simoni-nitidiventrīs*. The legs and antennae more sparsely clothed with short and oblique hairs. Head and clypeus longitudinally rugose, the spaces between the rugosities smooth and slightly shining. Thorax reticulately rugose, the rugae emphasised longitudinally, the spaces between them slightly shining. Face of the 1st node of the petiole smooth and shining, the 2nd node reticulate-rugose above. First segment of the abdomen shining, very finely rugose and feebly punctured. Legs smooth and moderately shining.

Head very little wider behind than in front, as long as wide. Eyes very convex and prominent, placed a little behind the middle of the sides. Clypeus subtriangular, wider behind than in front, the anterior margin slightly convex, the posterior margin not clearly defined. Mandibles longitudinally and sharply striate, armed with 5 small teeth, the apical tooth subacute and larger than the rest. Antennal scrobes smooth and shining, extending back almost to the posterior angles of the head. Scapes dilated in the apical half, as long as flagellum less the apical joint. First joint of flagellum as long as wide, 3rd-5th joints wider than long. The anterior margin of the pro-mesonotal disc convex, produced at the anterior corners into a sharp angle on each side; on each side, in the middle, the margin of the disc is semicircularly and rather abruptly excised, and in front and behind this excision the margin is slightly concave. The posterior angles of the disc are produced into 2 small acute teeth, which are a little longer than they are wide at the base. Between the lateral teeth the posterior margin also bears 2 smaller triangular teeth. The epinotum is margined laterally and produced on each side into a sharp spine, which is at least twice as long as it is wide at the base. First node of the petiole cuneiform, almost linear above, as wide at the base as it is high, the anterior face vertical; 2nd node globose, as wide as the 1st. Sides of the thorax and epinotum transversely and sparsely rugose.

Estcourt, Natal (R. C. Wroughton). (S.A.M., R.M., G.A. colls.); type in my collection.

M. PERINGUEYI, Emery. (Plate VIII, figs. 115, 115a.)

Bull. Soc. Ent. Ital., vol. 18, p. 365, ♀, 1886.

♀. 2.7-4.2 mm. Black; tarsi and antennae more or less brownish-black. Head and thorax subopaque, nodes and abdomen dull, legs slightly shining. Pilosity abundant and woolly, composed of fairly long whitish hairs, erect on the body, oblique, less dense and shorter on the legs and scapes. Flagellum moderately pubescent. Head, thorax, and nodes coarsely reticulate-rugose, the spaces between the reticulations slightly shining and roughened; the rugae more or less longitudinal on the head, on the nodes finer and closer. The abdomen is very closely and fairly finely reticulate-punctate. Epinotum shallowly rugulose and shining above, striate laterally between the epinotal spines and the posterior margin of the mesonotum. Sides of thorax irregularly and shallowly rugose.

Head, excluding the mandibles, as long as wide behind, narrowed

gradually from back to front, the posterior margin convex, the posterior angles rounded. Eyes very convex, large, placed behind the middle of the sides. Scrobes extend back almost as far as the occipital margin, shining and nearly smooth, with a few vertical striae posteriorly. Frontal carinae very divergent. Median area of clypeus longitudinally rugose, wider behind than in front, the sides somewhat raised, the anterior margin convex. Mandibles closely and fairly strongly striate, armed with 5 stout teeth. Pro-mesonotum in front as wide as the head, one-fifth wider than long, the anterior angles acute and dentiform. Lateral margins of pronotum feebly concave; there is a slight excision between the pro- and mesonotum, the suture obsolete. Mesonotum as long as the pronotum, its lateral margins slightly concave, the posterior lateral angles armed with a tooth, which is hardly longer than wide at the base; between the lateral teeth, the posterior margin is produced into two much smaller and triangular teeth, the space between them concave. Epinotum armed with two acute, divergent spines, much longer than their basal width, and longer than the mesonotal teeth. The upper face of the epinotum is shallowly concave transversely, and nearly vertical. First node of petiole cuneiform, the anterior and posterior faces meeting in a trenchant edge above, the ventral surface convex and bearing a small tooth in front. Second node globose, a trifle longer than wide, not wider than the 1st. Abdomen globose, emarginate at the junction with the petiole, much wider than the thorax.

Cape Prov. (Peringuey); Willowmore, Cape Prov. (Brauns).

The specimens from Willowmore measure 4-4.2 mm. in length, greatly exceeding in size the types of Emery, which measure 2.7-3.5 mm. (S.A.M., R.M., G.A. colls.)

M. SIMONI, Emery.

Ann. Soc. Ent. France, vol. 63, p. 41, ♀, 1895.

“♀. 3 mm. Fusco-ferruginous, abdomen piceous; head, dorsum of thorax and petiole coarsely reticulate, the abdomen punctulate, dull, evenly clothed with a long pilosity; pre-mesonotal suture obsolete, anterior angles of pronotum acutely produced, the posterior margin of mesonotum deeply emarginate, with a strong, large and acute spine on each side; epinotum bispinose; 1st node cuneiform, 2nd node subglobose. Vrijburg (Simon).”

“In the shape of the thorax the species approaches *M. Magrettii*, André, from which it differs more especially by the greater development of the mesonotal teeth, which form strong spines, longer than

they are wide at the base. Between them, the posterior margin is deeply and arcuately emarginate, with a little and deeper excision in the middle. The anterior angles of the pronotum are acute and produced forwards; the lateral margins of the pronotum converge gradually and almost in a straight line, from the anterior angles backwards to the position of the suture, where they are abruptly constricted. The sides of the mesonotum converge in the same way as far as the apex of the spines. The head and thorax are very sharply reticulate-rugose; on the head the sculpture tends to form longitudinal ridges, especially in front, but this arrangement is less noticeable than in *Magrettii*. The surface of the head is, moreover, also finely punctulate. The abdomen is very densely punctulate and dull, and sprinkled with small piligerous punctures. The hairs are long, and all of about the same length."

Race *SUTURALIS*, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 424, ♀, 1910.

"♀. 3-3.3 mm. Head and abdomen brown; thorax, petiole and limbs reddish. Clypeus without the 2 very small teeth in front which are to be seen in the race *nitidiventris*, Mayr. The sides of the thorax are emarginate between the pro- and mesonotum, and the pro-mesonotal suture is visible as a transverse line. Mesonotal spines much wider, longer and more robust than in the race *nitidiventris*, longer than the thin spines of the epinotum. Otherwise identical; abdomen shining as in *nitidiventris*. Natal (Haviland)."

(S.A.M. coll.) The reticulations on the pro-mesonotum are much smaller than in *nitidiventris*.

Race *NITIDIVENTRIS*, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 26, ♀, 1901.

♀. 3.1-3.6 mm. Brownish-black, thorax and nodes dark reddish-brown, legs dark brown, bases and apices of the femora and tibiae, the tarsi, mandibles and the first five joints of the flagellum paler, more or less ferruginous. The anterior three-fourths of the head longitudinally rugose, becoming more reticulate posteriorly, the posterior fourth reticulate. Epinotum irregularly rugose and partly reticulate between the spines and the posterior margin of the mesonotum. Abdomen moderately shining, very shallowly, closely and finely reticulate, more strongly reticulate over the basal third. The thorax is duller than in

the type of the species, but nevertheless fairly shining between the reticulations. The posterior margin of the mesonotum lacks the little median excision which is present in the type. Meso- and epinotal spines equal in length, but the latter are thinner and more acute than the former, which are slightly curved upwards at the apex. Otherwise like the type of the species,

♀. 6.1 mm. (hitherto undescribed). Colour as in the ♂, but the scutellum, epinotum, and petiole more or less dark red or reddish-brown. Sculpture like that of the ♂, but the superimposed reticulations on the base of the abdomen are stronger than in the ♂, and the meshes more elongate. Eyes not much larger than in the ♂, the ocelli small and depressed. Pronotum very little exposed above in the middle, more exposed at the sides, the shoulders subangular. Mesonotum moderately convex in front, rather flat behind, one-third wider across the tegulae than long. Scutellum subtriangular, the sides feebly convex, narrowly rounded behind, projecting somewhat over the very short metanotum. Dorsum of epinotum obsolete between the teeth. The latter are triangular, acute, as long as wide at the base; the declivity vertical, smooth and shining. Nodes as in the ♂. Abdomen emarginate at the base, ovoid, longer than wide. Wings rather long (the front wing 6 mm. long), tinged with yellow, the nervures and stigma brownish-yellow. Otherwise like the ♂.

♂. 5.3 mm. (hitherto undescribed). Black, the articulations of the legs reddish, the tarsi, antennae and mandibles pale dirty yellow. Head, thorax and nodes slightly shining, abdomen very shining. Pilosity thinner, less abundant and less woolly than in the ♀. Head and thorax very coarsely reticulate-rugose, the rugae becoming more longitudinal on the posterior third of the mesonotum; epinotum longitudinally rugose above, the declivity transversely striate, the sides of the thorax and epinotum more or less rugoso-striate. Nodes finely striate longitudinally, abdomen smooth except at the extreme base round the articulation with the petiole, where it is fan-wise striate. Seen from the side, the head is almost angular above at the ocellar region, the anterior and posterior surfaces falling steeply downwards from that point. The head is wider than long, widest across the eyes, the outline behind the eyes almost semicircular. Eyes very large and hemispherical, occupying the anterior half of the sides of the head; the ocelli large and prominent. Mandibles small, elongate, with an acute apical tooth and minutely denticulate behind. Scapes short, half as long as the distance between their sockets and the anterior ocellus; 1st joint of flagellum slightly longer than wide, the 3rd and following joints all somewhat swollen and thicker at their basal third. Meso-

notum very convex in front, hiding the pronotum almost entirely from above. The scutellum is very convex lengthwise, and is separated from the mesonotum by a deep and clathrate groove. Dorsum of epinotum very oblique, twice as wide as long, sharply marginate at the sides, a little longer than the vertical declivity. Both segments of the petiole somewhat flattened dorso-ventrally, wider than deep. The 1st segment, seen from above, more or less trapezoidal, almost as long as wide in front, convex and widest in front, the anterior lateral angles acute and produced. Second segment like the 1st but shorter, the anterior margin less convex transversely. First abdominal segment widened towards its apex. Wings as in the ♀ but shorter. Legs fairly long and slender.

S. Rhodesia, fairly common on the granite and schist formations. Types of ♀ and ♂ in my collection. (S.A.M., R.M., G.A. colls.)

Var. SPRINGVALENSIS, n.v.

♀. 3.1 mm. Head and abdomen very dark brown, the base of the latter a little paler. Thorax and nodes yellowish-red. Legs and antennae brownish-yellow, the scape and club brown. This variety differs from the description of the type of the species only in the almost smooth and very shining abdomen. From the race *nitidiventris* it may be distinguished by the smaller size, paler thorax, and the much thinner epinotal spines.

Springvale, S. Rhodesia. (S.A.M., R.M., G.A. colls.); type in my collection.

TRIBE DACETINI, Forel.

Including the following genera: *Strumigenys*, Smith; *Microdaceton*, Santschi; and *Epitritus*, Emery. All the species are easily recognised by the shape of the head, which is strongly cordate and often deeply emarginate behind.

GENUS STRUMIGENYS, Smith.

Journ. Ent., I, p. 72, 1860.

Characters.

♀. Antennae 6-jointed, club 2-jointed and usually much longer than the rest of the flagellum. Head cordate, narrowed considerably in front, and higher behind than in front, the posterior margin often

deeply emarginate. Mandibles elongate, the internal and external margins often much longer than the masticatory, which is generally armed with acute teeth. A complete scrobe present. Eyes small and placed low down on the sides. Frontal carinae widely divergent, forming the upper boundary of the scrobes. Thorax widest in front, narrowed laterally and depressed above at the meso-epinotal suture, both thoracic sutures more or less defined. Epinotum often bidentate or bispinose. Declivity of epinotum often furnished with a foliaceous or membranaceous margin on each side. Petiole generally covered, at least at the sides, with a spongy mass of material, probably formed by a coalescence of spatulate hairs. First segment of petiole with the peduncular and nodal portions distinct; 2nd node wider than the 1st, transverse. Abdomen generally very convex below, flattened above. Legs fairly long and slender, the middle and posterior tibiae without calcaria. Pilosity usually composed of clavate and spatulate hairs.

♀. Like the ♂, except the usual sexual differences in the structure of the thorax. Eyes larger than in the ♂; ocelli present. Wings with an open radial cell and one median cell, the cubital and discoidal cells absent.

♂. Antennae 13-jointed.

Distribution. Both hemispheres.

Key to the ♂ ♀ of Strumigenys.

- (14) 1. Mandibles distinctly toothed.
- (11) 2. Mandibles armed with 3 or 4 teeth near the apex; all, or at least three of them very long, acute and spiniform.
- (10) 3. Mandibles half as long as the head, or very nearly so.*
- (5) 4. Last joint almost twice as long as the rest of the flagellum.
Traegsaordi, Santschi.
- (4) 5. Last joint not more, or less than one-third longer than the rest of the flagellum.
- (7) 6. Sides of the head very convex *irrorata*, Santschi.
- (6) 7. Sides of head not very convex, obliquely rectilinear or slightly concave in the median third.
- (9) 8. Mesonotum distinctly depressed behind; dorsum of epinotum horizontal *Arnoldi*, Forel.
- (8) 9. Mesonotum not depressed behind, merely feebly convex over its whole length; dorsum of epinotum oblique *Havilandi*, Forel.
- (3) 10. Mandibles distinctly less than half the length of the head.
Havilandi, race *Marleyi*, Arnold.

* N.B.—In this key, and in the subsequent descriptions, the head is measured along the median line, from the anterior margin of the clypeus to the middle of the occipital margin. The measurement of the mandibles excludes the portion hidden beneath the clypeus.

- (2) 11. Mandibles with numerous small and distinct teeth, not spiniform.
- (13) 12. Colour dark ochreous; anterior margin of clypeus shallowly concave; 2nd and 3rd joints of flagellum as long as wide . *emarginata*, Mayr.
- (12) 13. Colour dark yellowish-brown; anterior margin of clypeus straight; 2nd and 3rd joints of flagellum wider than long . *transversa*, Santschi.
- (1) 14. Mandibles practically edentate, the masticatory margin being very long and furnished with minute denticulations which are visible only under a very high magnification.
- (16) 15. Pronotum dull, reticulate-punctate.
- Escherichi*, Forel, race *boerorum*, Santschi.
- (15) 16. Pronotum shining, almost smooth.
- (18) 17. 1·7 mm. long; dorsum of epinotum flat . . . *Simoni*, Emery.
- (17) 18. 2·1-2·4 mm. long; dorsum of epinotum convex.

Escherichi, race *limbata*, Forel.

S. TRÆGAORDHI, Santschi.

Göteborgs Kungl. Vetensk. och Vitterh. Handl. XV, 2, p. 28, ♀, 1914.

“ ♀. 2 mm. Dark reddish-yellow, sometimes brownish; the middle of the abdomen brown. Mandibles, antennae, and legs yellowish. Dull. Reticulate-punctate. The front of the 2nd node and the abdomen smooth and shining, except a few striae on the base of the latter. Pilosity spatulate, elongate, and abundant, symmetrical and oblique on the sides of the head and the inferior margin of the scape; on the latter there are 6 or 7 hairs directed outwards. On the thorax there are only short, erect, and truncate hairs, together with 4 or 6 much longer and clavate hairs; these occur again more abundantly over the whole abdomen. Pubescence fine and more or less decumbent, sparse on the head and thorax, more abundant on the mandibles, antennae, legs, and abdomen. Head one-fifth longer than wide, emarginate behind, the posterior angles widely rounded. Eyes with 3 or 4 facets. The scape, very little dilated, reaches the posterior fourth of the head, as also the scrobe. Fourth joint of flagellum distinctly longer than the 1st; 2nd and 3rd joints wider than long; 5th joint nearly twice as long as the rest of the flagellum. Mandibles linear, slightly curved, with 4 teeth, of which 3 are spiniform and subequal, 2 apical, and 1 placed at the distal third of the mandibles. The 4th tooth is smaller, placed between the innermost and the apical pair, separated by a wide interval. Pronotum twice as wide as long, marginate and arcuate in front, the anterior angles slightly prominent. The pro-mesonotal suture not very distinct. Mesonotum constricted and impressed in its middle, its anterior half forming with the pronotum a fairly strong convexity. Meso-epinotal suture well defined. Dorsum of epinotum marginate, narrower in front than

behind, and on the same level as the posterior half of the mesonotum. Epinotal spines a little longer than their basal width, as long as one-third of the interval between them. Declivity of epinotum concave, margined at the sides with a band of spongy tissue. First node higher and wider than long, rounded at the summit, which, seen from above, has a transversely rectangular shape, barely arcuate anteriorly. The anterior face is hardly convex, oblique, and a little shorter than the dorsal face. Second node twice as wide as long, convex in front, nearly straight behind. A spongy mass covers the lower surface and also the sides of the petiole.

“ Pietermaritzburg and Sweetwaters, Natal. (Traegaordh). ”

S. IRRORATA, Santschi.

Loc. cit., p. 29, ♂.

“ ♂. 1.5 mm. Reddish-yellow. Antennae and legs of a paler yellow. Finely reticulate-punctate. Dull. Nodes and abdomen smooth and shining, except a few striae at the base of the latter, and some longitudinal striae on the pronotum. Head clothed with spatulate hairs, short and white; forming a row on the lower margin of the scape and directed outwards, also on the margin of the clypeus. Pronotum also with spatulate hairs, but less abundant. In addition, there are also some long hairs, with or without clavate ends. Mandibles, legs, and antennae fairly pubescent. Head one-sixth longer than wide, emarginate behind, the sides very convex. Eyes with 4 or 5 facets. The scape and its scrobe extend a little beyond the posterior fourth of the head, the scape fairly dilated. First and 4th joints of the flagellum subequal, the 4th wider than the 1st, the 2nd and 3rd wider than long, the last joint one-fourth longer than the rest of the flagellum. Mandibles linear and moderately curved, distinctly shorter than half the length of the head, with 3 long teeth feebly incurved above, the 3rd placed at the distal fourth of the mandible, the teeth crossing when the mandibles are closed. Pronotum (without the neck) twice as wide as long, marginate and arcuate in front, the shoulders rectangular, well defined but obtuse; the sides straight, submarginate and convergent behind. Pro-mesonotal suture distinct, concave behind. Mesonotum twice as long as wide in the middle, twice as wide in front as behind, submarginate. Epinotum marginate, the dorsum narrower in front, a little longer than it is wide behind. Epinotal spines as long as they are wide at the base, nearly as long as one-third of the interval between them. Declivity margined with a band of spongy tissue. First node

obtusely angular, wider than long, more convex transversely in front than behind. The anterior face straight and inclined, a little shorter than the peduncle. Second node two and a half times wider than long, feebly emarginate in front, surrounded by a large mass of spongy tissue which extends below the 1st node.

“Lake Sibayi, Zululand. (Traegaardh).”

S. ARNOLDI, Forel. (Plate VIII, figs. 117, 117a-d.)

Ann. Soc. Ent. Belg., vol. 57, p. 114, ♂, 1913.

♂. 1.8 mm. Reddish-ochreous; legs, antennae, and mandibles a little paler. Head dull, very densely reticulate-punctate. Dorsum of thorax and the 1st node subopaque and reticulate-punctate, but much more shallowly than the head; the pronotum longitudinally and irregularly striate in addition. Sides of thorax, 2nd node, and abdomen smooth and shining. The abdomen with 4 or 5 strong and oblique striae on each side of the base, extending beyond the basal third of the 1st segment. Legs and scapes closely reticulate-punctate and dull. Mandibles rugulose. Pilosity on the head composed of whitish-yellow spatulate hairs (see fig. 117b), fairly abundant and evenly disposed. A row of 7 hairs, directed outwards, lies on the outer margin of each scape. The pilosity of the thorax, nodes, and abdomen very sparse and irregular, composed of long clavate hairs (see fig. 117a). Femora and tibiae more sparsely pilose, the hairs smaller and more decumbent and less distinctly spatulate. Mandibles, tarsi, and flagellum with a sparse decumbent pubescence.

Head, excluding the mandibles, one-fifth longer than wide (or including the posterior lateral lobes, two-fifths longer), a little more than twice as wide at its greatest width as it is across the anterior margin of the clypeus; fairly convex at the sides over the posterior third, almost parallel-sided in front, the posterior margin concave, deeply and widely emarginate. Scrobes deep, distinctly margined above and below, and divided in the basal half by a strong and longitudinal ridge. Eyes small, composed of 4 or 5 facets, placed below the lower margin of the scrobe and not visible from above. Clypeus triangular, equilateral, the anterior margin straight. Frontal carinae convex outwardly above the antennal sockets, thence widely divergent. First and 4th joints of the flagellum subequal, 2nd and 3rd wider than long, 5th joint one-third longer than the rest of the flagellum. Mandibles linear, half as long as the head, almost parallel, feebly convex externally, armed with 4 long and spiniform teeth. Two of these subequal and placed at the apex, the innermost at about

the distal third; between the latter and the apical pair lies a smaller tooth. Pronotum submarginate at the sides, feebly carinate in the middle, a little longer than wide, the anterior margin very convex transversely, sloping downwards and forwards. Pro-mesonotal suture obsolete above. Mesonotum longer than wide, the posterior half narrower than the anterior and depressed. The dorsum of the epinotum a little longer than wide, feebly convex lengthwise, merging by a short curve into the declivity. The latter is margined on each side by a spongy band, which reaches the lower edge of the epinotal spines. The latter are longer than their basal width, nearly as long as the interval between them. Peduncle of the petiole longer than the node; the latter cuboid, as wide as long, a little wider behind than in front. Second node transversely oval, twice as wide as the 1st, two-thirds wider than long. Both nodes margined behind and below (including the peduncle) with spongy tissue, which also extends over the sides of the base of the abdomen. Under the 2nd node this spongy tissue is deeper than the node itself and covers a spinose process. Abdomen flattened above, very convex below.

Bulawayo. Taken on one occasion only, under a stone and in the nest of *Bothroponera Krugeri*, Forel. Apparently very rare. (R.M., G.A. colls.)

S. HAVILANDI, Forel.

Mitth. Mus. Hamburg, vol. 22, p. 13, ♀, 1905.

“ ♀. 2.4-2.6 mm. Mandibles half as long as the head, feebly curved outwardly near the base and thence almost straight or barely convex, so that a space is left between them which is a little wider than the width of the mandible itself. The latter is narrow, at first parallel-sided, then gradually attenuated in the apical half, quadridentate. Two long sharp teeth are placed on the inner margin behind the apex. The two apical teeth are long, thin, and widely divergent, the upper one longer than the lower. The mandibles are dull, with a long, yellowish and adpressed pubescence, and a row of longer and outstanding hairs on the inner margin before the apex. Head cordiform, much longer than wide . . . with a feeble semilunar emargination posteriorly. Not emarginate laterally. Clypeus wider than long, emarginate in front, fairly flat. Frontal carinae dilated in front. Scapes curved, feebly spindle-shaped. Last joint somewhat longer than the rest of the flagellum. The anterior part of the head, in front of the antennal sockets, transversely rectangular much wider than long. Eyes fairly small. Pronotum convex in,

front, behind which the dorsal profile of the thorax is straight and without any emargination. Pro-mesonotal suture indistinct. Meso-epinotal suture very clearly defined. Dorsum of the epinotum distinctly marginate, about one and one-third times longer than wide, a little wider behind. Epinotal teeth short, about as long as two-thirds of the interval between them. Declivity of the epinotum with a feeble translucent band on each side. Both nodes wider than long, the 2nd twice as wide as the 1st, the latter shorter than its peduncle. There is a ribbon of spongy tissue below the 1st segment of the petiole, and a mass of the same tissue around the ventral projection of the 2nd node. There is very little of it above and behind the nodes. Legs fairly long and thin. Sides of thorax, 2nd node, and abdomen smooth; the latter almost without basal striae. Head dull, densely reticulate-punctate. All the rest very finely reticulate, at the most only slightly shining, in part dull. On the dorsum of the thorax the meshes are partly converted into longitudinal rugae. On the body there is a scanty pilosity composed of very short clavate hairs. There is also a row of such hairs on the anterior margins of the clypeus and scapes, and along the sides of the frontal carinae. Similar clavate hairs, shining and decumbent, are plentiful on the head, scanty on the rest of the body. In addition, there is a fine adpressed pubescence on the body and the limbs, the latter without outstanding pilosity. Rusty yellowish-red. The vertex and a cloudy transverse band on the abdomen yellowish-brown."

"Natal, 5300 ft. (Haviland)."

Race MARLEYI, Arnold.

Proc. Rhod. Sc. Assn., vol. 13, part 3, p. 31, ♂, 1914.

♂. 2.6 mm. Differs from the type of the species as follows: The mandibles are shorter, much less than half as long as the head. The head, measured from the anterior margin of the clypeus to the apices of the posterior angles, is two and a half times as long as the mandibles. The last joint of the flagellum is not longer than the rest of the flagellum. The dorsum of the epinotum is slightly shining, wider than long. The sides of the thorax are not smooth as in the type species, but distinctly reticulate-punctate and dull. The base of the abdomen distinctly striate at the sides, the striations covering a fan-shaped area. Otherwise like the type.

Durban. Two specimens in a nest of *Pheidole punctulata* (H. B. Marley); type in my collection.

S. EMARGINATA, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 26, ♀, 1901.

♀. 2-2.2 mm. Ochreous; the abdomen and mandibles slightly brownish-yellow. Abdomen and 2nd node moderately shining, the rest of the body dull. Head, thorax, excepting the pronotum, dorsum of epinotum, and 1st node finely and closely reticulate-punctate; the declivity of the epinotum, the 2nd node, and the abdomen smooth, the basal third of the latter strongly and obliquely striate on each side (about 6 striae on each side). Head, pro-, and mesonotum clothed with curved spatulate hairs, very scantily on the pro- and mesonotum, fairly abundantly on the head. Anterior margin of the scape with a row of such hairs, directed outwards. The anterior margin of the clypeus with a dense row of scale-like hairs. The rest of the body very sparsely and irregularly pilose, the hairs fairly long and acuminate, not clavate. Legs with adpressed and simple hairs. Head not quite half as long again as wide, at its widest point two and two-fifths wider than the width of the anterior margin of the clypeus, the posterior margin widely and fairly deeply emarginate, not very convex at the sides. The scapes and the scrobes do not extend back beyond the eye by a distance greater than the long diameter of the latter. The scrobes much shallower than in *Arnoldi* or *Havilandi*, the upper and lower margins not very clearly defined. First joint of the flagellum a little longer and thinner than the 4th, 2nd and 3rd joints about as long as wide, 5th joint nearly one-third longer than the rest of the flagellum. Eyes fairly large, composed of 20 or more facets. Posterior margin of clypeus angular, the anterior margin shallowly concave. The mandibles are more than half hidden under the clypeus, the exposed apical portion feebly convex externally, the internal margin armed with numerous small teeth. The dorsal profile of the thorax is almost flat, the pronotum slanting very slightly downwards and forwards, the mesonotum feebly depressed in the middle. The pronotum is longer than wide, rounded at the sides and in front, faintly striate. Pro-mesonotal suture very feeble, the meso-epinotal a little more distinct. Dorsum of epinotum widest between the spines, as long as wide. Epinotal spines long and acute, almost parallel, quite as long as the interval between their bases. First node, seen from above, more or less hemispherical, rounded and narrower in front; 2nd node twice as wide as long, a little more than twice as wide as the 1st, transversely oval or lenticular, the anterior margin more convex than the posterior. Abdomen distinctly depressed in the middle near the base. Both nodes covered behind and below

with masses of spongy tissue, very large below the peduncle of the 1st node. A very narrow band of the same tissue margins each side of the vertical declivity of the epinotum. Ventral surface of abdomen very convex.

Port Elizabeth (Brauns). (G.A. coll.)

S. TRANSVERSA, Santschi.

Göteborgs Kungl. Vetensk. och Vitterh. Handl., XV, 2, p. 31, ♀, 1914.

“♀. 2.2 mm. Dark yellowish-brown. Mandibles, antennae and legs of a lighter brown. Head covered with curved spatulate hairs. A regular fringe of similar hairs borders the clypeus and the lower margins of the scapes, but on the latter the five inner hairs are directed inwards, and the two outer ones outwards. A few rare hairs of the same kind occur on the pronotum. Epinotum and abdomen with simple hairs, fairly scanty. Legs, antennae and abdomen pubescent. Reticulate-punctate and dull. Declivity of the epinotum, 1st segment of the petiole and the abdomen smooth and shining, except a few striae on the basal fourth of the latter.

“Head one-quarter longer than wide, emarginate behind. Clypeus pentagonal, the anterior margin straight (concave in *emarginata*, Mayr), partly covering the mandibles. The latter denticulate on the front half, the exposed part a little shorter than the length of the clypeus. First and 4th joints of the flagellum subequal, 2nd and 3rd a little wider than long, the 5th as long as the rest of the flagellum. Pronotum much wider than long, the anterior margin forming a narrower triangle. Pro-mesonotal suture very distinct. Mesonotum slightly convex, continued behind on the same level as the dorsum of the epinotum, which is marginate and parallel-sided. Epinotal spines wide at the base, longer than half the interval between them, slightly divergent. Declivity of epinotum concave, margined with spongy bands. First node low, the anterior face only slightly oblique, the summit rounded and wider than long. Second node twice as wide as the 1st, and twice as wide as long, convex. A fairly large spongy mass surrounds the nodes. Allied to *emarginata*, Mayr, from which it differs chiefly in the colour and the clypeus, which is not emarginate.

“Pietermaritzburg (Traegaordh).”

S. SIMONI, Emery.

Ann. Soc. Ent. France, vol. 63, p. 42, ♀, 1895.

“♀. 1.7 mm. Testaceous, reticulate-punctate, dull, the dorsum of

the pronotum shining, 2nd node of petiole and the abdomen smooth and very shining. Head elongate, emarginate behind, narrowed in front, clypeus convex, arcuate in front, mandibles porrect, the masticatory margin very long and nearly straight from the clypeus to the apex, minutely denticulate; 4th joint of the flagellum hardly shorter than the preceding three taken together. Thorax evenly convex over the pro-mesonotum, the dorsum of the epinotum depressed, the spines short, the declivity margined with spongy bands. Peduncle of the 1st joint of the petiole long, the node subglobose, reticulate; 2nd node transversely ovate and shining.

“Makapan (Simon).”

“This species is remarkable on account of the very elongate form of the mandibles (the teeth of which are numerous and excessively minute). . . . The head, mesonotum, epinotum and the 1st node are very closely reticulate-punctate and dull, the rest is shining. There are no striae at the base of the abdomen. The spongy appendage of the petiole is only feebly developed. The head bears some small curved and squamiform hairs; clavate hairs occur only on the petiole and abdomen.”

S. ESCHERICH, Forel, race *LIMBATA*, Forel. (Plate VIII, fig. 118.)

Zool. Jahrb., vol. 29, p. 261, ♀, 1910.

(Race) Deutsch. Ent. Zeitschr. (Beiheft), p. 222, ♀, 1913.

♀. 2.1–2.4 mm. Dark brownish-red, legs, antennae and mandibles dark yellow. Head, meso- and epinotum and 1st node reticulate-punctate and dull; pronotum moderately shining, sparsely and feebly striate, narrowly carinate in the middle. Declivity of the epinotum, 2nd node and abdomen smooth and shining, the latter longitudinally striate over the basal third. Pilosity fairly sparse on the head, very sparse on the nodes and abdomen, the epinotum glabrous. The pilosity consists of clavate hairs, curved and flattened on the head, longer and erect elsewhere. The broad spatulate hairs present in the other species are absent. The two outermost hairs on the anterior margin of the scape are directed outwards, the rest inwards. On the thorax there are only two clavate hairs, one on each side of the middle of the mesonotum. Head, measured from the anterior margin of the clypeus to the middle of the occipital margin, very little longer than wide, the sides not very convex, the posterior margin fairly deeply but not widely emarginate. The scrobes are well defined and fairly deep, and with the scapes extend back almost to the end of the posterior angles. Frontal carinae prominent. Eyes small, composed of about

12 facets. Clypeus more or less triangular, the anterior margin convex. Mandibles edentate, less than half as long as the head; their external margins converge towards the apex, so that the mandibles form an isosceles triangle with a small space between them at the base. First and 4th joints of the flagellum subequal, 2nd and 3rd about as long as wide, 5th joint as long as the rest of the flagellum. Pronotum wider than long, fairly convex in front and at the sides, the shoulders subangular; pro-mesonotal suture faintly defined. The posterior half of the mesonotum rather abruptly depressed; meso-epinotal suture thin but fairly distinct. Dorsum of epinotum a little longer than wide, convex transversely and longitudinally over the basal half, oblique and flat over the apical half. Epinotum and posterior half of mesonotum finely submarginate. Epinotal teeth short, hardly longer than their basal width, moderately divergent, directed obliquely upwards. A narrow and transparent band margins each side of the declivity, starting from the lower side of the teeth. The peduncle of the petiole is much longer than the node; the latter, seen from above, a little longer than wide (not including the portion behind, which is more or less hidden by spongy tissue), rounded in front and at the sides, fairly flat above. Second node twice as wide as the 1st, transversely oval, furnished below with a long perpendicular spine which is hidden by spongy tissue. The latter is not plentiful.

♀. 3.1 mm. (hitherto undescribed). Eyes larger than in the ♂, occupying about one-fifth of the sides of the head. Ocelli small. Shoulders of pronotum subangular, exposed above. Mesonotum higher than the pronotum, the anterior margin narrowed in front and angular, but with the apex of the angle somewhat rounded, as long as it is wide across the tegulae. Scutellum semicircular, nearly half as long as the mesonotum, much higher than the dorsum of the epinotum, which is steep and wider than long. Epinotal teeth triangular, shorter than in the ♂. Sides of mesothorax smooth and shining. Dorsum of epinotum shorter than the declivity. Peduncle of the petiole twice as long as the node; the latter, seen from above, transversely rectangular, twice as wide as long. Second node transversely oval, two-thirds wider than long, one-third wider than the 1st. The spongy tissue occurs as a narrow band on the lower surface of the peduncle and also surrounds the 2nd node behind and below. Basal third of the abdomen strongly and longitudinally striate. Otherwise like the ♂. Deälated.

Bulawayo, a small nest of about 18 ♀ ♀ under a stone; Durban, ♀ ♀ and ♀ (H. B. Marley). Type of ♀ in my collection. (S.A.M., R.M., G.A. colls.)

Race *BOERORUM*, Santschi.

(As race of *cognata*), Bull. Soc. Ent. France, p. 258, ♀, 1913.

Göteborgs Kungl. Vetensk. och Vitterh. Handl., XV, 2, p. 32, ♀, 1914.

“♀. 2.2 mm. Reddish-yellow, mandibles, antennae and legs paler. Basal segment of abdomen tinged with brown in the middle. Pilosity as in the type. Sculpture stronger. The pronotum is subopaque and more strongly longitudinally striate than in *cognata*. It is also reticulate-punctate and dull, like the rest of the dorsum of the thorax and the 1st segment of the petiole. The sides of the thorax, 2nd segment of the petiole and the abdomen smooth and shining, the abdomen with about 20 striae at the base. Head as in *cognata*, the mandibles hardly shorter. Second and 3rd joints of the flagellum distinctly longer than wide. Pronotum with a feeble median carina. Mesonotum with the anterior angles more prominent, marginate; the dorsum of the epinotum also feebly marginate. Spongy tissue as in the type.”

This race is unknown to me in nature. The illustration accompanying the author's text shows the mandibles half as long as the head, the posterior margin shallowly emarginate, the 5th joint as long as the rest of the flagellum.

“♀. 2.5 mm. Vertex, tegulae and scutellum blackish-brown. The rest of the dorsum of the thorax reddish-brown. Second node brown like the abdomen, the rest as in the ♀. Dull, reticulate-punctate. Second node and the abdomen smooth and shining, the base of the latter striate as in the ♀. . . . Deälated.

“Stamford Hill, Natal and Dukudu, Zululand (Traegaordh).”

GENUS *MICRODACETON*, Santschi.

Göteborgs Kungl. Vetensk. och Vitterh. Handl., XV, 2, p. 33, 1914.

Characters.

♀. Small insects. Antennae 6-jointed. The 1st-4th joints of the flagellum subequal and elongate, the 5th forming the club. Head cordiform. Mandibles linear, dentate at the apex. No scrobes present. The scapes are hidden at the base by the lobes of the frontal carinae. Head, thorax and 1st joint of the petiole dentate or spinose. No spongy tissue present.

Distribution.—South Africa. Monotypic.

M. EXORNATUM, Santschi.*Loc. cit.* ♂.

“♂. 2.8 mm. Reddish-yellow. Middle of the abdomen tinged with brown. Mandibles, antennae, and legs yellow. Pubescence very fine and sparse on the body, a little more abundant on the legs and antennae. Pilosity absent. Head and thorax coarsely and evenly reticulate, with little pits or punctures between the meshes. Both nodes and the abdomen very finely striolate-rugose and slightly shining. Head cordiform, very deeply emarginate behind, a little longer than wide, bearing three pairs of teeth as follows: 1. A fairly short spine near the posterior angle. 2. A similar spine placed above, at the posterior fourth of the head. 3. A longer spine, external to the insertion of the antennae and directed outwards. The eyes, placed a little in front of the middle of the sides, are very convex, their diameter equalling the length of the 1st joint of the flagellum. The scape extends back as far as the posterior fourth of the head. Anterior margin of clypeus emarginate in the middle. Mandibles linear, two-thirds as long as the head, dilated at the base and ending at the apex in three spiniform teeth. Thorax much narrower than the head. Sides of pro-mesonotum rounded, without shoulders in front. The pronotum and front of the mesonotum is abruptly and step-like depressed towards the meso-epinotal suture, with a tooth at the angles. Epinotum marginate, concave transversely, armed with strong spines directed outwards and upwards and as long as the dorsum of the epinotum. First segment of the petiole with a long peduncle in front, the node low and armed with three spines, two lateral ones in front and a median one behind. Second segment three times wider than long, and three times wider than the 1st, the sides lamelliform, emarginate and narrower in front than behind; the posterior margin biconcave. The ventral surface of both nodes unarmed, flattened, and without any spongy tissue. Abdomen oval, as wide as the head.

“Dukudu, Zululand (Traegaardh).”

GENUS EPITRITUS, Emery.

Bull. Soc. Ent. Ital. I., p. 136, 1869.

Characters.

“♂. Head subcordiform, wide behind, narrowed in front, the posterior margin emarginate. Clypeus triangular. Mandibles more or less elongate and straight, sometimes curved at the apex, without a masticatory margin, the inner margin more or less strongly denticu-

late. Labrum acuminate, produced like a beak between the mandibles. Maxillary and labial palpi 1-jointed. Antennae 4-jointed, the scape fairly short, the last joint of the flagellum oval and very large. Eyes small and placed low down at the sides. Thorax wide in front and narrowed behind, hardly constricted between the meso- and epinotum, the latter bidentate. First segment of petiole pedunculate in front, the node sometimes furnished with spongy tissue; 2nd node very wide, transverse, furnished above and at the sides with spongy tissue. Abdomen oval, longitudinally striate at the base. Middle and hind tibiae without calcaria.

“♀. Ocelli present, eyes larger than in the ♂. Pronotum exposed above, wide, with distinct and obtuse shoulders. Epinotum bidentate. A little larger than the ♂.

“♂. Head longer than wide, narrowed in front of the eyes, rounded behind them. Mandibles narrow, feebly arcuate, diminishing gradually in width from the base to the apex, and ending in a sharp point, edentate. Eyes large and convex, placed in front of the middle of the sides. Ocelli of medium size. Antennae 13-jointed, scape very short and fairly thick, about as long as the 2nd joint of the flagellum, the 1st joint very short, hardly longer than wide, the following joints cylindrical and subequal except the last, which is about as long as the preceding two together. Thorax short, as high as wide. Mayrian furrows feeble. The dorsum and declivity of the epinotum not distinctly delimited, the former unarmed or with only a trace of teeth. First joint of petiole subconical when seen from the side; widest behind; 2nd joint low, wide, and transverse. Wings with one cubital and a radial cell, discoidal cell absent.”

The above generic characters have been extracted from Andre's 'Spec. Hymen. Europe,' pp. 402-4, 1883, and, being more complete, are reproduced here in preference to Emery's original diagnosis, which is based on the ♀ sex only.

E. MANDIBULARIS, Szabo.

Arch. Zool. Budapest, I., p. 27, ♂, 1909.

Santschi, Göteborgs Kungl. Vetensk. och Vitterh. Handl. XV, 2,
p. 34, ♀, 1914.

“♂. Fuscous testaceous, dull, closely punctured, finely pubescent, antennae and legs paler, abdomen shining and finely striate at the base, erect hairs sparse and barely clavate. Head broadly subcordi-

form, arcuately emarginate behind between the vertex and occiput. Clypeus long, slightly emarginate in front, covering about two-thirds of the mandibles. Mandibles subparallel, arcuate apically, armed with 7 very acute and unequal teeth. Scape of antenna short, of unequal width, its lower margin bearing clavate hairs, 2nd and 3rd joints of flagellum (1st and 2nd of flagellum? G.A.) very small, the last joint hardly twice as long as the two preceding together. Disc of thorax convex, meso-epinotal suture absent, epinotal spines acute, wide at the base, moderately divergent. First segment of the petiole pedunculate in front, widening into a node behind, 2nd segment much wider but shorter than the 1st, seen from above trapeziform. Both nodes furnished at the sides and below with spongy tissue. Length, 1.5-1.6 mm.

“Mto-ya-kifaru, German East Africa.”

“♀. 1.9 mm. Colour and sculpture as in the ♂. The striae at the base of the abdomen effaced in the middle. The articulations (tegulae?) of the wings and the vertex slightly brownish. Scutellum dull.

“Stamford Hill, Natal. One ♀.”

TRIBE CATAULACINI, Emery.

Comprising only the following genus:

GENUS CATAULACUS, Smith.

Trans. Ent. Soc. London, II, p. 225, 1854.

Characters.

♂. Antennae 11-jointed, club 3-jointed, the scape curved, dilated in the apical half. Well-defined scrobes present, capable of receiving the whole of the folded antennae, and placed below and external to the eyes (differing therein from all our other Myrmicine genera). The very divergent frontal carinae do not border the scrobes except at the base of the latter. Margins of the upper surface of the head more or less denticulate, the posterior angles more or less dentiform. Clypeus triangular, the posterior limits feebly defined. Mandibles rather small and stout, armed with 4 or 5 small teeth or edentate. Eyes large and rather flat. Margins of pro-mesonotum denticulate; thoracic sutures obsolete. Epinotum armed with broad and dorso-

ventrally flattened teeth. Nodes of petiole stout, the 1st node usually cuboid or somewhat conoid, the dorsal face sometimes tectiform, the ventral surface produced into a laminate process; 2nd node globose, the ventral surface bearing a blunt tubercle in front. Abdomen oblong, the sides not very convex, the 1st segment forming the whole of the dorsum. Femora and tibiae thick.

♀. Antennae 11-jointed. Abdomen usually more elongate and less convex laterally than in the ♂. Wings with 1 cubital cell and a closed radial cell. Otherwise like the ♂.

♂. Antennae 11-jointed. Eyes larger than in the ♀, ocelli small. Epinotum generally bidentate. Nodes longer than in the ♀. Scrobes present as in the ♂ and ♀.

I have not drawn up a key to the few species which I have seen, as the majority of our species are unknown to me in nature. Moreover, a perusal of the literature concerning this genus plainly indicates that many of the so-called species and races are very closely allied, so much so that I believe a study based on more abundant material will later on serve to reduce the present number of species to a much smaller figure. A marked general uniformity in colour, sculpture, and main structural features exists in all our species. They are all black, with the scapes, tarsi, and tibiae more or less reddish. In all, the sculpture of the head consists of a coarse reticulation; sometimes the rugae are sharp, in other cases flattened or abraded, and are also frequently emphasised in the longitudinal direction. The thorax, at least anteriorly, is more coarsely reticulate than the head. The nodes are very strongly rugose, and the abdomen has a fundamental sculpture of very regular and small reticulations. This fundamental sculpture also occurs on the head and thorax in the spaces between the larger reticulations, but is usually less distinct than on the abdomen. The length of the epinotal spines compared with the length of the interval between their bases is of some diagnostic value, but their degree of divergence is less reliable, being subject to an appreciable degree of variation even in examples taken from the same nest. The denticulations of the margins of the thorax, and their number, are also somewhat variable. The length of the abdomen and the degree of convexity of its sides are perfectly useless characters, since a wide range of variation exists in the various specimens from one nest, and it is therefore most regrettable that species have been erected partly on such characters.

All the species of this genus are tree-ants, usually forming medium-sized nests in hollow twigs and stems, or more rarely, under the bark.

They are timid and slow-moving insects, often feigning death or dropping rapidly to the ground when disturbed. As Bingham has remarked in connection with this genus (Fauna Brit. India, *Formicidae*), these ants have the habit of wandering over the trunks of trees and the leaves in what appears to be a very aimless and languid manner. I have occasionally seen them breaking open the earthen tunnels constructed by termites over the trunks of trees and attack the inmates. I have not yet observed any of the species attending on aphids or scale insects, although it is quite probable that they do so.

(N.B.—It is usually necessary to use a magnification of not less than 35 diameters to appreciate the character of the fundamental sculpture.)

C. BAUMI, Forel.

Mitth. Schweiz. Ent. Ges., vol. 10, p. 304, ♂, ♀, ♂, 1901.

“ ♂. 4.5–4.8 mm. Very similar to *hararicus*, Forel, but the head is by no means so much narrowed in front, and the frontal carinae are wider. The body is dull; the sculpture much coarser, reticulate, or reticulate-rugose on the head, with almost pit-like and dull meshes, coarsely and longitudinally rugose on the thorax and petiole. Abdomen fairly finely and evenly rugose longitudinally (more strongly so than in *hararicus*), and also densely reticulate-punctate and dull. The femora are black. Otherwise like *hararicus* and also very similar to *Johannae*, but without the tooth on the head behind.

“ ♀. 6 mm. The pits on the head are entirely separated, discrete; duller, narrow, and net-like strands run between them. The dull mesonotum is sparsely pitted. Rugosity of the elongate abdomen weaker than in the ♂. Deälated.

“ ♂. 4.3 mm. Also dull, the abdomen shallowly reticulate and shining. There is a small tooth on each of the posterior angles of the head. Sculpture on the head and thorax more superficial than in the ♀. Mesonotum with some sparse and shallow pits; Mayrian furrows present. Head and thorax dull and more strongly sculptured. Head strongly convex and gibbous above. Epinotal teeth wide, short and blunt. Wings short, yellowish, the nervures pale. Antennae almost the same as those of the ♀, also the scrobes and legs.

“ Cubango-Cuito, Mossamedes. This species differs from *rugosus*,

Forel, in the much shorter epinotal teeth, the finer rugosity of the abdomen, and particularly in the general sculpture."

So far not recorded from our region.

Var. *BATONGA*, Forel. (Plate VIII, figs. 119, 119a.)

(As race) Ann. Soc. Ent. Belg., vol. 57, p. 114, ♀, 1913.

♀. 3.8–5 mm. Black; tibiae, tarsi, and scapes ferruginous, the metatarsus of the middle and hind legs a little darker. Flagellum piceous. Pilosity scanty, composed of regularly disposed and very short, blunt, and thick whitish hairs, erect on the body, oblique on the legs and scapes. Below each eye there are three longer and thinner hairs of a brownish colour. Pubescence present only on the club of the flagellum. The sculpture of the head consists of a close network, the strands of which are somewhat flattened and accentuated longitudinally (this is due to the longitudinal strands being continuous, whereas the transverse ones are short and broken); the floor of the meshes is shallowly rugulose, and the meshes are rarely twice as wide as the strands which bound them. In the type of the species, on the other hand, the strands are sharper, less flattened, and the meshes are quite three times or more wider than the strands, and their floor is reticulate rather than rugulose. The thorax is longitudinally rugose and partly reticulate, except in front, where it is transversely and irregularly rugose. The sculpture of the thorax in front and behind is very strong, forming sharp outstanding ridges, and between the epinotal spines there are three or four equally strong transverse rugae. Sides of the thorax reticulate-punctate and sparsely sulcate. Declivity of the epinotum smooth. Both nodes are very coarsely and more or less longitudinally rugose above, deeply sulcate between the rugae. Legs and abdomen very closely, finely, and evenly reticulate-punctate (appearing granulate under a low power). The basal third of the abdomen is also longitudinally and moderately rugose, the rugae diminishing apically. Tibiae and femora also partly rugose.

Head a trifle wider behind than long, narrowed slightly and gradually in front of the eyes, the clypeal area sloping steeply downwards, the posterior margin very shallowly emarginate. There is a strong tooth at each posterior angle, and another tooth of the same size placed nearer the middle of the posterior margin. The latter and the sides, as far as the anterior border of the eyes, denticulate. Just in front of the eye the margin is produced into a broad and obtuse tooth, and ends in front, near the base of the mandibles, in another tooth, which is usually obtuse, but sometimes fairly angular

and prominent. The outline of the clypeus behind is semicircular and indistinct, the anterior margin feebly impressed in the middle. Mandibles oblong, armed with 4 or 5 small and blunt teeth, strongly striato-punctate and dull. The eyes are large, oval, placed behind the middle of the sides and occupying about one-third of the same. The scrobes are deep and oblique, placed outside and below the eyes. Scapes flattened and dilated in the apical half, not extending back beyond the hind margin of the eyes. Flagellum short and thick, all the joints, except the 1st and last, much wider than long. Thoracic sutures obsolete above, sharply defined at the sides. Thorax narrower than the head, the anterior margin arcuate; the sides of the pronotum subparallel. From the posterior end of the pronotum the thorax is gradually narrowed as far as the base of the epinotal teeth. There is a moderately prominent and triangular tooth at the middle of the lateral margins of the mesonotum, and a slightly longer tooth on each side of the base of the epinotum. The sides of the pronotum are denticulate, the denticles varying in size and number, but usually from 7 to 8. The mesosternum on each side has a blunt, short tooth at the lower and anterior angle. The epinotal teeth are flattened, slightly divergent, directed very obliquely upwards and backwards, not quite as long as the interval between their bases, narrowed abruptly at the apical third. Declivity quadrate, wider than long, shallowly concave from above to below. First node of petiole convex transversely, subquadrate, narrower behind; seen from the side, it has a subvertical anterior face and a longer and oblique posterior-dorsal face. The ventral surface bears a strong tooth, widely truncate and pointing forwards. The 2nd node, hardly wider than the 1st, is wider and higher in front than behind and a little wider than long. Abdomen arcuately emarginate at the base, the sides feebly convex, a little longer than wide.

I have one specimen of the type of the species taken at Mossamedes and kindly given to me by Dr. Forel. From this example *batonga* differs by the sculpture of the head and also by the much feebler sculpture of the pronotum, which is a little wider. The denticulations of the lateral margins of the thorax are stronger than in *Baumi*, i. sp., and the epinotal teeth are shorter, less divergent, and less acute. In all my specimens of *batonga* the head is wider in front than in the example of the type, not narrower, as stated by Dr. Forel.

This form cannot be considered as more than a variety. I have given the description in some detail in order to use it as a basis of comparison and to avoid prolixity in the descriptions of the other species.

Var. BULAWAYENSIS, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 218, ♂, ♀, 1914.

♂. 4.5–5.2 mm. This differs from *batonga* as follows: The head is less narrowed in front of the eyes. The marginal teeth on each side of the angles of the clypeus are slightly larger but not more acute. The sculpture of the head is stronger, both the reticulations and spaces between them being wider. This also applies to the thorax, in which the reticulations are more distinctly accentuated longitudinally, and are more coarse in the anterior half of the pronotum. The teeth at the base of the lateral margins of the epinotum are prominent and much larger, the epinotal spines more divergent. Otherwise like *batonga*.

♀. 6.1–6.4 mm. The sculpture differs from that of the ♂ in having the reticulations less distinct; this is due to the surface being deeply pitted and the space between the pits rather flattened. On the pronotum the sculpture is stronger, and on the mesonotum the pits are elongate and sparser. The dorsum of the epinotum is very coarsely and transversely rugose. The fundamental sculpture of the thorax and nodes consists of a very fine and close reticulation. The head is more parallel-sided than in the ♂, and the lateral margins behind the eyes are only feebly denticulate. The ocelli are inconspicuous and level with the surface. The pronotum is widely exposed above and hardly lower than the mesonotum. The latter, excluding the paraptera and scutellum, is roundly triangular. Dorsum of epinotum moderately convex transversely, almost horizontal, and about twice as wide as long. Epinotal teeth shorter than in the ♂, their inner margins truncate at the apex. The abdomen, except towards the base and apex, parallel-sided, about three-fifths longer than wide. Wings tinged with yellow. Otherwise like the ♂.

Bulawayo; nesting in hollow twigs of *Acacia horrida*. (R.M., G.A. colls.)

C. INTRUDENS, Smith.

Trans. Ent. Soc. London, p. 609, ♂, ♀, ♂, 1879.

“♀. 3 lines (=6.2 mm.). Opaque black; the scape of the antennae, the base and apex of the flagellum, the tips of the femora, the tibiae, anterior tarsi, and the apical joints of the intermediate and posterior pairs, light ferruginous; the wings flavo-hyaline, the nervures rufo-testaceous.

"Head, thorax and nodes of the peduncle with rugose confluent punctures; the head longer than broad, slightly narrowed before the eyes; the posterior margin of the vertex broadly emarginate. The anterior margin of the prothorax arched; the thorax about the same length as the head, narrowed behind the insertion of the wings; the metathorax (epinotum) with two blunt spines. Abdomen oblong and very finely shagreened, emarginate at the base and rounded at the apex.

"♀. Only differs from the ♀ in being rather shorter and in the form of the thorax; the abdomen shorter, with the sides less parallel.

"♂. $2\frac{1}{2}$ lines. The colour and sculpture as in the ♀. Head wider than the thorax, much narrowed before the eyes; the lateral angles of the posterior margin of the vertex subspinose. Thorax anteriorly arched; the mesothorax with two curved, deep, broad channels that curve inwards and unite at the base of the scutellum (= Mayrian furrows); the scutellum, the spines of the epinotum and the nodes of the petiole grooved longitudinally; the wings as in the ♀; the abdomen subovate, slightly emarginate at the base and pointed at the apex.

"*Hab.*—Weenen district, Natal; (in thorns of *Acacia*). Some of the ♀♀ have the legs more or less ferruginous."

As is so frequently the case in Smith's descriptions, the diagnosis is confined to what are mainly generic characters, and the specific ones are conspicuous by their absence. The description of the ♀ is hopelessly inadequate.

C. RUGOSUS, Forel.

(As race of *intrudens*), Mitth. Schweiz Ent. Ges., vol. 9, p. 78, ♀, 1894.

Mayr, Ann. K.K.N.H. Mus. Wien, vol. 10, p. 129, ♀, 1895.

"♀. 4.8 mm. Larger than *intrudens*. Epinotal spines stronger, longer, and more divergent. Thorax and head strongly and longitudinally rugose; pronotum in front, the head behind and the epinotum between the spines coarsely and transversely rugose. Abdomen longitudinally striate, very distinctly so at the base, indistinctly elsewhere. Petiole coarsely longitudinally rugose.

"Delagoa (Dr. A. Muller)."

"♀. Not larger or hardly larger than *intrudens*. The head is coarsely and longitudinally rugose, the rugae connected together, the meshes irregular and elongate; the posterior angles of the head are dilated in a dentate form, and the two little teeth on the posterior

margin are very small. The 2nd node of the petiole is twice as wide as long, and seen from above, has a short dilatation on each side which resembles a very small hook, bent backwards (often less distinct in the ♀)."

Delagoa Bay (Brauns).

Var. SUBRUGOSUS, Santschi.

Göteborgs Kungl. Vetensk. och Vitterh. Handl., XV, 2, p. 26, ♀, 1914.

"♀. Differs from the type from Delagoa Bay by the finer sculpture of the abdomen (connecting it with *intrudens*, Smith). It is almost as strong and coarse on the dorsum of the thorax as in the type, but more regular and more parallel. The spines of the epinotum are a little shorter and the lateral teeth of the dorsum smaller.

"Junction of the Umfolozis, Zululand (Traegaordh)."

C. MICANS, Mayr.

(As race of *rugosus*), Ann. K.K.N.H. Mus. Wien, vol. 16, p. 27, ♀, ♀, ♂, 1901.

Forel, Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 219, 1914.

"♀. 3.4-3.7 mm. Smaller than *rugosus*. The head not much narrowed in front, more so in *rugosus*. The thorax above, a little more arched lengthwise over its posterior half than in *rugosus*. The mesosternum on each side has a forwardly directed and acute tooth at the lower and anterior corner, just in front of the articulations of the middle pair of coxae; in *rugosus* this tooth is shorter, as long as, or shorter than its basal width. The epinotal spines are shorter than in *rugosus*, and their apices more or less distinctly obliquely truncate and rounded, whereas in the other species they are simply acute. The 2nd node rounded at the sides, hardly wider in front than the 1st (in *rugosus* the 2nd is distinctly wider than the 1st, and there is often a small tooth at the sides). Abdomen glossy or moderately shining (dull in *rugosus*), and much more shallowly sculptured."

Dr. Forel separates this form from *rugosus* on account of its smaller size, and the shape of the 1st node of the petiole. This is almost conical, with an anterior-dorsal face which is smooth; its summit behind is emarginate in the middle. In *rugosus* the node is cubic,

with the dorsal face less inclined forwards, coarsely rugose transversely.

“♀. 5-5.2 mm. The shape of the head and petiole as in the ♂. The abdomen narrower than in *rugosus*, sculpture and glossiness as in the ♂.”

“♂. 4.3 mm. Black, the apical half of the mandible, the antennae, tibiae, tarsi, and the external genitalia rusty or brownish-red. The pilosity as in the ♀. The head, like that of *intrudens*, strongly narrowed in front, so that when the mandibles are closed it appears fairly triangular; it is somewhat wider than the thorax, coarsely rugose lengthwise, finely and closely punctured between the rugae, the posterior angles bearing a small tooth. The lateral margins of the head, from the posterior end of the scrobes to the posterior angles, are denticulate. Eyes much more convex than in the ♀. The sculpture of the thorax is about the same as that of the head; the epinotal teeth are smaller than in the ♀, wide at the base, thin near the apex. The mesosternum has a dentiform anterior angle. The petiole is very coarsely and longitudinally striate, and, in addition, very closely and finely punctate; the 2nd node hardly wider than long. The 1st abdominal segment is very finely reticulate and nitidulous, near the base also longitudinally striate.

“Port Elizabeth (Dr. H. Brauns).”

Race DURBANENSIS, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 219, ♀, 1914.

♀. 3.9-4.2 mm. The sculpture of the head is more or less reticulate and composed mainly of longitudinal strands with short transverse bars. The sculpture is stronger than in *Baumi* var. *batonga*. The denticulations round the margins of the head are fairly prominent, and the 2 teeth near the posterior angles are proportionately much larger than in *batonga*. The spaces between the reticulations on the head and thorax are feebly shining and microscopically rugulose. The thorax is longitudinally rugulose, more transversely reticulate-rugose on the anterior half of the pronotum. The fundamental sculpture of the abdomen is densely and finely reticulate-punctate; the coarser sculpture is longitudinally rugose, the rugae wide, extending from base to apex, deeply sulcate between the rugae. The sulcate abdomen distinguishes this from our other two small species, *brevisetosus* and *Marleyi*. The mesosternal teeth are much larger, longer, and more acute than in either of those two species or *Baumi*

and its varieties; they are directed outwards and forwards and are plainly visible when the insect is looked at from above. The characters distinguishing this race from the type of the species are given by Dr. Forel as follows:

"The race *durbanensis* is distinguished from the type of *micans* by its dull abdomen, which is strongly and longitudinally rugose (almost shining and finely reticulate, with only a few feeble rugae, in the type of *micans*). In addition, the sides of the abdomen are much more convex, and it is a little shorter. The head is much narrower in front, and like the sides of the prothorax has much stronger denticulations. The epinotal spines are also a little longer and less elevated. The epinotum itself is narrower and the dorsum longer. Its lateral tooth near the base is much more feeble and very slightly apparent. The 2nd node of the petiole is much shorter and narrower. The hairs on the body are longer and less obtuse."

♀. 6 mm. (hitherto undescribed). The head is very little narrowed in front of the eyes, which are flatter than in the ♂. The sculpture of the head is coarser and more distinctly reticulate than in the ♂, the spaces between the rugae somewhat excavated, without forming distinct pits. The denticles on the lateral margins of the head are more or less effaced, but the 2 teeth near the posterior angles are much larger than in the ♂. Head only slightly wider behind than the prothorax. The pronotum is very coarsely rugose, the rugae very prominent and trenchant. Mesonotum, scutellum, and epinotum irregularly and coarsely rugose, the rugae on the mesonotum between the parapsidal sutures more or less effaced. The lower anterior corner of the mesosternum is merely angular, not spinose as in the ♂. Epinotal teeth parallel, horizontal, truncate at the apex, barely half as long again as their basal width, much shorter than the interval between them. The 1st node is as long as wide in front, the anterior half of the sides parallel, the posterior half converging inwards. Second node subglobose, a little more than one-fifth wider than the 1st, and a little wider than long. Both nodes strongly rugose lengthwise and deeply grooved between the rugae. The 1st node has a broad, oblong, and laminate projection below which ends in front and behind in dentate angles. Abdomen long, parallel-sided, emarginate at the base and broadly rounded at the apex, one and three-quarter times longer than wide. Deälated. Otherwise like the ♂.

♂. 4.4 mm. (hitherto undescribed). Colour as in the ♀; pilosity longer, less obtuse, and a little more abundant. Head and thorax longitudinally rugose, very coarsely rugose on the epinotum and nodes, much more finely on the head and mesonotum. The pronotum

somewhat transversely rugose and reticulate. The spaces between the rugae on the mesonotum, epinotum, and nodes slightly shining. The fundamental sculpture all over consists as usual of a very fine and close reticulation. Abdomen moderately shining, feebly longitudinally striate near the base.

Head, including the closed mandibles, subtriangular, a little longer than wide behind. The posterior margin slightly concave, the posterior angles dentate, the lateral margins behind the eyes distinctly denticulate, narrowed in front of the eyes. The latter, placed for the greater part behind the middle of the sides, are very convex and occupy about one third of the sides. The ocelli are fairly apparent and not flattened, as in the ♀. The lower anterior angles of the pronotum dentate, rectangular. Mayrian furrows on the mesonotum deep and wide. The paraptera of the mesothorax are produced posteriorly into flattened and horizontal lobes, rounded at their apices (this character is absent from the only other ♂ of the genus which I have seen, *brevisetosus-lujae*). The profile of the dorsum of the thorax forms a low convexity, the pro- and epinotum not much lower than the mesonotum. The dorsum of the epinotum is about as long as the scutellum, widest at its base. Epinotal teeth triangular, wider than long, moderately divergent, the margin between them, *i. e.*, the brow of the declivity, arcuate. On each side of the base of the dorsum of the epinotum there is a small dentiform angle. First node of the petiole less convex transversely above than in the ♀; the anterior lateral angles rounded, not rectangular as in the ♀. The 2nd node more or less trapezoidal, the anterior margin convex, wider in front than behind, wider than the 1st node, one and a half times wider than long, the anterior lateral angles subacute and prominent. Abdomen oval, narrowed towards the apex, the sides fairly convex, one and a half times longer than wide. The 1st node has a ventral projection as in the ♀, but it is not so long from back to front, and less sharply dentate at its free angles.

Durban. (S.A.M., R.M., G.A. colls.); types of ♀ and ♂ in my collection.

In the opinion of Dr. Santschi (see Ann. Soc. Ent. France, vol. 84, p. 508, 1916), *brevisetosus* and *lujae* are but races of *pygmaeus*, André; the form described above, and so determined by Forel himself, differs from *lujae* in some minor features according to Dr. Santschi, who has, therefore, named it var. *plebeja* of race *lujae*. These slight differences come within the limits of variation which, as I have remarked before, may be found in a single nest, and for that reason I have not considered it advisable to adopt Dr. Santschi's revision.

C. BREVISSETOSUS, Forel, race LUJAE, Forel.

Mitth. Schweiz. Ent. Ges., vol. 10, p. 305, ♀, 1901.

(Race) Deutsch. Ent. Zeitschr. p. 311, ♀, 1911.

♀. 3.2-4 mm. Colour and pilosity as in *batonga* and the preceding species. Whole body fairly dull. Head reticulate, the reticulations raised and sharply defined and much narrower than the spaces between them. Thorax and nodes longitudinally and coarsely rugose. The rugae on the thorax have short transverse branches, which barely meet the rugae on either side, the spaces between them very finely reticulate. Abdomen closely and finely reticulate-punctate, with a few fine longitudinal striae superimposed near the base, sometimes extending beyond the middle of the abdomen. Head quadrate, rounded and very slightly narrowed in front of the eyes, barely longer than wide, the sides in greater part parallel, the posterior margin straight. The two teeth on each side of the posterior margin fairly strong and prominent, the side margins of the head feebly denticulate, the tooth in front of the eye small and inconspicuous. Eyes large, more oblong than in the preceding species, placed in greater part behind the middle of the sides and occupying about two-fifths of their length. The anterior margin of the clypeus has a shallow and fairly wide emargination in the middle, behind which the surface of the clypeus is slightly depressed. Prothorax narrower than the head. Lateral margins of the pro-mesonotum strongly denticulate, the pronotum nearly twice as wide as long. Mesonotum not much narrower at the base than in front (considerably narrower in *durbanensis* and *Marleyi*). Dorsum of epinotum twice as wide in the middle as long, the lateral teeth near the base wide and obtuse; epinotal spines fairly divergent, flattened, nearly twice as long as their basal width and longer than the interval between their bases, which is deeply arcuate. Nodes of petiole similar to those of *batonga*, but the 2nd node is much higher in front than behind and higher than the 1st. Abdomen longer than wide, rounded at the apex, emarginate at the base. The degree of convexity of the sides of the abdomen is rather variable, in some specimens it is fairly great, in others the sides are almost parallel.

♀. 4.6 mm. Ocelli small. The teeth on the posterior margin of the head smaller than in the ♀. Mesonotum longitudinally rugose (the fundamental sculpture is densely reticulate-punctate), the rugae fine and parallel. Epinotal teeth shorter and broader than in the ♀, and more obtuse at the apex. The 1st node of the petiole is less wide in front, almost parallel-sided. Abdomen parallel-sided, quite twice as long as wide. Deilated. Otherwise like the ♀.

♂. 4 mm. Black, tibiae, tarsi, scapes, and 1st joint of the flagellum bright ochreous, the rest of the flagellum piceous. Dull, reticulate-punctate. The head also finely reticulate-rugose, mostly longitudinally. Epinotum and nodes coarsely rugose. Abdomen moderately shining, finely and feebly reticulate. Head, seen from above and excluding the convexity of the eyes, triangular, with the apex of the triangle widely truncate. The portion of the head in front of the eyes is much shorter in this species than in *durbanensis*. The sides of the head without denticulations, the teeth on the posterior margin very small. The head is a little longer than wide, wider behind than the anterior margin of the thorax, but narrower than the middle of the same. Mayrian furrows much deeper than in *durbanensis*, and more coarsely clathrate. Dorsum of epinotum not much narrowed apically; the spines triangular, not longer than wide at the base, the brow of the declivity shallowly arcuate. The 1st node is widest in front, a trifle longer than wide, the middle of the sides slightly angular. Second node without the subacute anterior lateral angles which are seen in *durbanensis*. Wings hyaline, faintly tinged with yellow. Pilosity longer and less obtuse than in the ♀ or ♀.

This race differs from the type, which has not yet been recorded from our region, in the wider pro-mesonotum and the stronger denticulations of the lateral margins. The meshes on the head are also smaller and deeper.

Bulawayo, in hollow twigs of *Acacia*; Kimberley (Power). (S.A.M., R.M., G.A. colls.)

C. MARLEYI, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 219, ♀, 1914.

♀. 3.6-3.9 mm. Colour as in the preceding species. Pilosity longer than in *micans-durbanensis*. Head and abdomen with a faint gloss, thorax fairly shining. Head longitudinally and not closely striato-rugose, barely reticulate. The sculpture of the thorax like that of the head but stronger. The rugae on the pro-mesonotum number about 10-12, and are rather wide apart, the spaces between them feebly rugulose. Nodes fairly strongly rugose and sulcate. Abdomen densely reticulate, with a few longitudinal rugae superimposed. Head very gradually narrowed from the posterior angles to the apex. The teeth on the posterior angles and on the sides behind the eyes acute

and prominent (larger than in *lujae* or *durbanensis*). The teeth in front of the eyes and at the anterior corners of the clypeus are fairly prominent. The denticulations of the lateral margins of the thorax are fairly large and acute. The tooth on each side of the mesonotum small, that on the sides of the epinotum almost obsolete. Thorax narrowed between the meso- and epinotum. Epinotal spines much more divergent than in *durbanensis* and *lujae*, nearly three times longer than their basal width, almost twice as long as the interval between their bases, fairly acute at the apex. The lower anterior angle of the mesosternum is only bluntly angular, not spinose as in *micans* and its race *durbanensis*. First node cuboid, a little higher and wider in front than behind, the anterior face feebly concave transversely. Second node trapezoidal, widest in front, slightly wider than the 1st, the anterior lateral angles rounded. Abdomen very shallowly emarginate at the base, the sides convex.

♀. 5 mm. (hitherto undescribed). Head finely and longitudinally rugose, with a few transverse strands, most of which are short and do not meet the rugae on either side. The sculpture of the thorax is similar to that of *lujae* but stronger. The head is much more narrowed in front of the eyes than in *lujae* or *durbanensis*, and the teeth at the anterior lateral angles of the clypeus are much larger and more prominent. The epinotal spines are much longer than in those two species, more divergent, and nearly twice as long as their basal width. The 1st node is a little longer than wide in front, not much wider in front than behind. Second node less convex than in *lujae*, more convex than in *durbanensis*. The emargination at the base of the abdomen has the angles on each side of it widely rounded, not obtusely rectangular as in *lujae*. The abdomen is closely and finely reticulate, slightly shining, feebly and longitudinally striate, two-thirds longer than wide, the sides parallel. Wings hyaline, the nervures pale yellow. Otherwise like the ♂.

Durban (H. B. Marley). (S.A.M., G.A. colls); type of ♀ in my collection.

C. TRAEGAORDHI, Santschi.

Göteborgs Kungl. Vetensk. och Vitterh. Handl., XV, 2, p. 24, ♂, ♀, ♂, 1914.

“♂. 3.5 mm. Black, scapes, tibiae and apices of the femora red or reddish-yellow. Pilosity yellow, shorter than in *Wissmanni*, Forel, and longer than in *Ebrardi*, Forel, evenly distributed. Dull. Head

reticulate-rugose, the meshes wider than in *Ebrardi* and *Wissmanni*. The rugae feebler, longitudinal on the head, transverse on the neck, coarse on the thorax, and rather irregular on the front of the pronotum, elsewhere longitudinal. The spaces between the rugae finely reticulate and fairly shining. Both nodes coarsely rugose and sulcate lengthwise. Abdomen closely and finely reticulate-punctate, also with superficial rugae which extend over the whole surface, becoming stronger towards the base.

"Head as wide as long, the sides convex, fairly narrowed in front, the posterior margin almost straight. The posterior angles and the sides behind the eyes denticulate; a tooth is present in front of each eye. Eyes fairly convex, nearly as long as the space between them and the anterior angles of the head. Clypeus emarginate in the middle. Thorax a little narrower than the head, two-thirds longer than wide, without dorsal sutures, moderately convex. Sides of pronotum parallel and denticulate. Epinotal spines as long as the interval between their bases. First node hardly longer than wide, higher than long; 2nd node lower and a little wider than the 1st, one-third wider than long, the anterior angles rounded. Abdomen distinctly longer than wide, the sides a little convex (shorter than in *Wissmanni* and longer than in *otii*, Forel).

"♀. 5 mm. Rugae on the pronotum oblique behind, fairly parallel and longitudinal on the mesonotum and scutellum (much more irregular in *Ebrardi*). Stronger and also longitudinal on the dorsum of the epinotum and on the two nodes (transverse on the 1st node in *Ebrardi*). The head is a little longer than in the ♂, distinctly narrower in front. The eyes are half as large again as the space between them and the posterior angles of the head. Thoracic sutures very distinct. Epinotal spines shorter than the interval between them, but slightly longer than in *Ebrardi*. First node a little longer than wide, nearly as long as in *Ebrardi*. Abdomen narrowly emarginate at the base, a little shorter than in *Ebrardi*. Wings hyaline, tinged with yellow, nervures yellow, stigma brownish. Otherwise like the ♂.

"♂. 4.3 mm. Sculpture finer than in the ♀, considerably effaced on the abdomen, which is fairly shining and has a few rudimentary striae near the base. Head narrowed in front, half as wide in front as behind. Eyes convex, one-third longer than the space between them and the posterior angles. Mayrian furrows well defined. Epinotal spines shorter and thicker than in the ♀. Otherwise like the ♀.

"Dukudu, Zululand; Umfolozi, Natal (Traegaardh)."

C. OTII, Forel, race FRICATIDORSUS, Santschi.

Loc. cit., p. 26, ♂.

“♂. 3 mm. Black; margins of the mandibles, flagellum and tarsi brownish-red. Scape, tibiae and apices of the femora red-yellow. Dull, dorsum of thorax and the abdomen subopaque. Sculpture much less coarse than in *Wissmanni* and *otii*, the rugae on the head finer and closer together, the spaces between them punctate and fairly shining. The rugae are effaced on the middle of the thorax, thus forming a space more weakly rugose, which is bordered by a network of thicker rugae which tend to become concentric. The rugae are transverse on the pronotum, longitudinal on the mesonotum, and again more or less transverse on the dorsum of the epinotum. Declivity finely punctured, with a few striae between the spines. Both nodes longitudinally rugose and sulcate. Abdomen reticulate-punctate, striate over the basal fourth or fifth. Pilosity very short and sparse, a little more so than in *Wissmanni*, Forel. Head nearly as wide as long, narrowed in front, the posterior margin straight, the posterior angles armed with two teeth which are stronger than in *Wissmanni*. Eyes fairly convex, one-third longer than the distance between them and the posterior angles, margined on the inner side by a stronger rugosity. Mandibles finely rugose (striate in *Wissmanni*). Thorax short, hardly one-quarter longer than wide (nearly one-half in *Wissmanni*), without sutures, strongly dentate on the lateral margins. Dorsum of epinotum shortened, the spines shorter and more elevated than in *Wissmanni*. First node as long as wide in front, with a foot-shaped ventral lobe. Second node one-third wider than long, twice as high as long, the sides rounded. Abdomen short, the sides convex, emarginate in front.

“Dukudu, Zululand (Traegaardh).”

C. WISSMANNI, Forel.

Mitth. Schweiz. Ent. Ges., vol. 9, p. 78, ♂, 1894.

“♂. 3.5 mm. Allied to *intrudens*, but smaller and narrower, the oval eyes much larger, flatter and more prominent outwardly. They are not emarginate in front, and are as long as the distance between them and the base of the mandibles. Head longer than wide, very moderately narrowed in front, nearly straight behind, with two small teeth near each posterior angle. Pro- and mesonotum together almost circular, the margins dentate. Epinotal spines slightly divergent, as

long as two-thirds of the width of the epinotum. Nodes of the petiole wider than long, the 2nd node twice as wide as long. Abdomen much longer than wide, concave in front, the sides almost parallel. The thorax is not much narrower than the head or abdomen, the whole body elongate and narrow. Limits of the clypeus distinctly defined. There is a small ridge on the margin of the head, extending from the base of the mandibles to near the eyes, where it is depressed and ends in a tooth. Dull, partly nitidulous, closely and finely reticulate-punctate. In addition, the head, thorax and petiole are coarsely, more or less irregularly and longitudinally rugose. Abdomen coarsely regularly and longitudinally striate, the striae almost entirely effaced in the middle. Legs and scapes reticulate. The whole body, including the legs and scapes, clothed with short truncate hairs. Pubescence nearly obsolete. Black; legs, flagellum and mandibles brown; scapes, tibiae, apices of the femora, and the tarsi brownish reddish-yellow.

“Mossambique (Dr. A. Muller).”

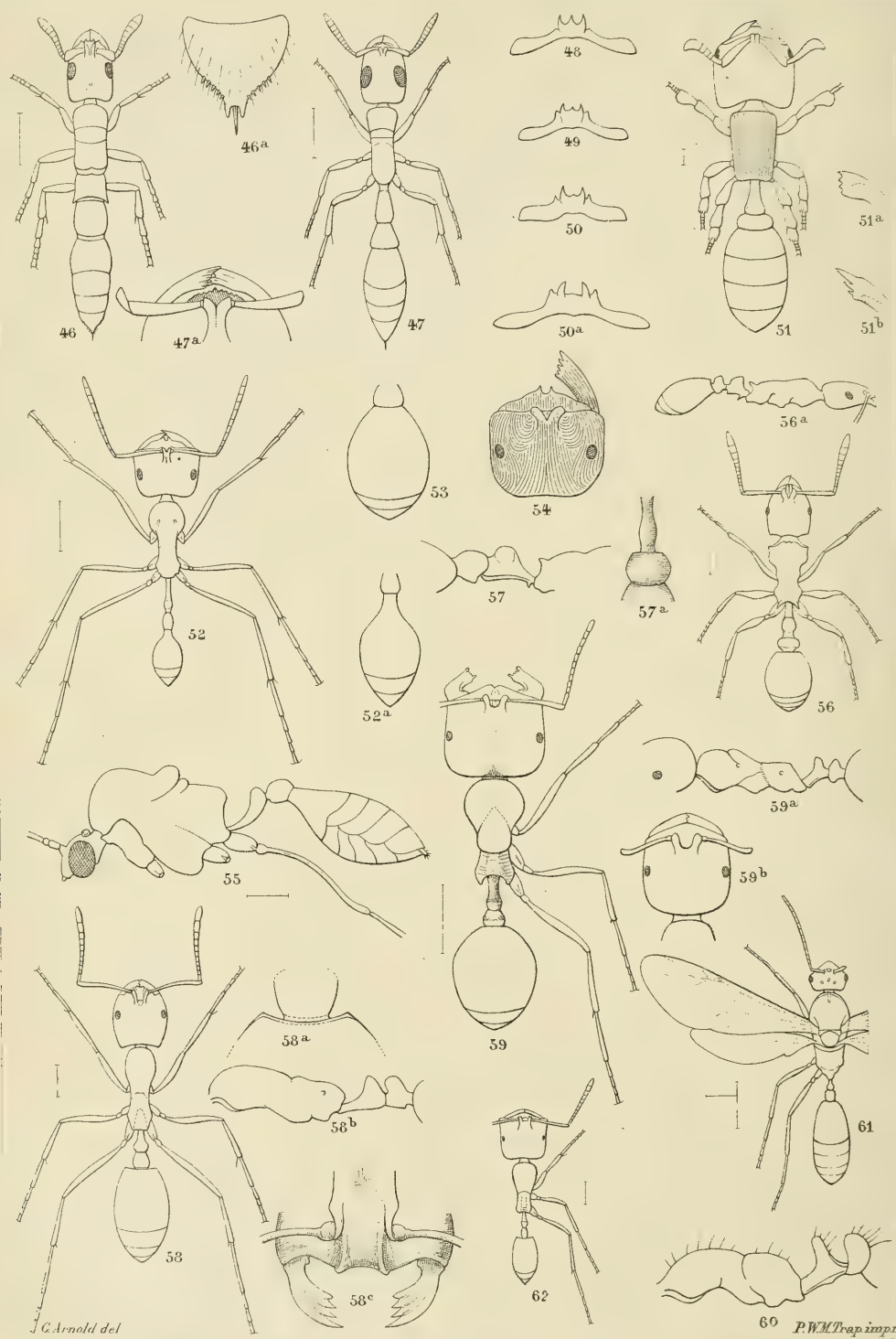
C. PARALLELUS, Smith.

Trans. Ent. Soc. London, p. 226, ♀, 1853.

“♀. $3\frac{1}{2}$ lines (= 7·2 mm.). Black; the head longitudinally rugoso-striate, the vertex emarginate, the emargination transversely rugoso-striate, the scape of the antennae and extreme apex of the flagellum ferruginous. Thorax longitudinally rugoso-striate; the metathorax (epinotum) on each side produced into a stout, sharp, bent spine, beneath which it is transversely sulcate; wings tinged with yellow, the nervures pale testaceous; the tibiae and tarsi ferruginous. The 1st node coarsely sculptured transversely, the 2nd longitudinally so. Abdomen oblong quadrate, finely aciculate at the base, beyond which it is delicately shagreened, and has towards the apex a few short, scattered and pale setae.

“Cape of Good Hope.”

This species is unknown to me, and it does not appear to have been recorded again since Smith's time. The type requires re-examination and further description as the species is insufficiently characterised by Smith. The above description is altogether too vague, as it could apply equally well to the ♀ ♀ of several other species.



C. Arnold del

60 *PWM* Trap impr

A Monograph of the Formicidae of South Africa.

EXPLANATION OF PLATES.

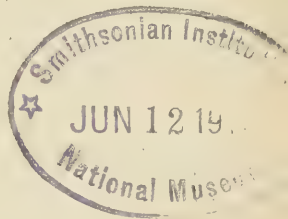
PLATE V.

FIG.

46. *Simopone marleyi* Arnold, ♀. × 6.
 46a. " " Arnold, ♀, pygidium. × 24.
 47. *Sima natalensis* Smith, race *cuitensis* Forel, var. *bulawayana* Forel, ♀. × 6.
 47a. " " Smith, race *cuitensis*, clypeus. × 24.
 48. " *clypeata* Emery, race *braunsi* Forel, var. *equidentata* Arnold, ♀, clypeus. × 35.
 49. " " Emery, race *braunsi* Forel, ♀, clypeus. × 35.
 50. " " Emery, ♀, clypeus. × 35.
 50a. " " Emery, ♀, clypeus. × 35.
 51. *Melissotarsus beccarii* Emery, ♀. × 16.
 51a. " " Emery, mandibles. × 35.
 51b. " " Emery, mandibles. × 35.
 52. *Ocymyrmex weitzaeckeri* Emery, var. *arnoldi* Forel, ♀. × 5.
 52a. " " Emery, var. *arnoldi* Forel, abdomen, ♀. × 9.
 53. " *barbiger* Emery, ♀, abdomen. × 9.
 54. " *weitzaeckeri* Emery, ♀, head. × 9.
 55. " " Emery, var. *arnoldi* Forel, ♂. × 10.
 56. *Leptothorax angulatus* Mayr, ♀. × 9.
 56a. " " Mayr, ♀ × 9.
 57. *Cardiocondyla emeryi* Forel, ♀, petiole. × 35.
 57a. " " Forel, ♀, petiole. × 35.
 58. *Monomorium afrum* André, ♀. × 9.
 58a. " " André, ♀, base of abdomen. × 35.
 58b. " " André, ♀, thorax and petiole. × 16.
 58c. " " André, ♀, clypeus. × 35.
 59. *Messor barbara* Linn, race *capensis* Mayr, var. *pseudoaegyptiaca* Emery, ♀. + 10.
 59a. " " Linn, race *capensis* Mayr, var. *pseudoaegyptiaca* Emery, profile of thorax. × 10.
 59b. " " Linn, race *capensis* Mayr, var. *pseudoaegyptiaca* Emery, ♀ minima, head. × 10.
 60. *Monomorium arnoldi* Forel, ♀, thorax and petiole. × 35.
 61. " *albopilosum* Emery, race *Thales* Forel, ♂. × 5.
 62. " *emeryi* Mayr, ♀. × 8.

PLATE VI.

63. *Pheidole crassinoda* Emery, race *ruspolii* Emery, ♀. × 4½.
 63a. " " Emery, race *ruspolii* Emery, ♀, profile. × 4½.
 64. " " Emery, race *ruspolii* Emery, ♀. × 6.
 64a. " " Emery, race *ruspolii* Emery, ♀, profile. × 6.
 65. " " Emery, race *ruspolii* Emery, ♀, profile of thorax. × 5.
 65a. " " Emery, race *ruspolii* Emery, ♀, head. × 5.
 66. " " Emery, race *ruspolii* Emery, ♂. × 5.
 67. " *punctulata* Mayr, ♀, head. × 9.
 68. " *xocensis* Forel, ♀, head. × 9.



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FIG.

69. *Pheidole excellens* Mayr, race *rhodesiana* Forel, ♀, node. × 16.
70. " *spinulosa* Forel, race *nexa* Forel, ♀, head. × 9.
71. " *Liengmei* Forel, ♀, head. × 6.
72. *Cremastogaster tricolor* Gerst, ♀. × 9.
- 72a. " " Gerst, ♀, profile. × 9.
73. " *sordidula* Nyl, var. *rectinota* Forel, ♀. × 16.
74. " *bulawayensis* Forel, var. (?) *oraclum* Forel, ♀. × 9.
- 74a. " *bulawayensis* Forel, var. (?) *oraclum* Forel, ♀, profile. × 9.
75. " *Kneri* Mayr, var. *amita* Forel, ♀, thorax. × 16.
76. " *Neuvillei* Forel, race *Cooperi* Forel, ♀. × 9.
- 76a. " " Forel, race *Cooperi* Forel, ♀, profile. × 9.
77. " *tricolor* Gerst, var. *mediorufa* Forel, ♀, node. × 16.
- 77a. " " Gerst, var. *mediorufa* Forel, ♀. × 16.
- 77b. " " Gerst, var. *mediorufa* Forel, ♂. × 16.
78. *Solenopsis punctaticeps* Mayr, ♀ maj., profile. × 9.
- 78a. " " Mayr, ♀ maj., profile. × 9.
- 78b. " " Mayr, ♀, node. × 20.
79. *Carebara vidua* Smith, ♀. × 16.
80. " " Smith, ♀. Natural size.
81. *Pheidologeton perpustillum* race *Arnoldi* Emery, Forel ♀. × 24.
- 81a. " " Emery, ♀, head. × 16.
82. *Cremastogaster bulawayensis* Forel, var. *rhodesiana* Forel.
♀, thorax. × 16.
- 82a. " " var. *rhodesiana* Forel.
♀, thorax. × 16.
83. " *Peringueyi* Emery, ♀, thorax. × 9.

(N.B.—The sculpture is shown only in figs. 67, 68, 70, 71, and 78b.)

PLATE VII.

84. *Atopomyrmex Mocquerysi* André, var. *curvispinosa* Forel, ♀. × 6.
85. " " André, var. *curvispinosa*, profile.
86. *Tetramyrma Braunsi* Forel, ♀. × 10.
87. *Myrmicaria eumenoides* Gerst., ♀. × 4½.
- 87a. " " Gerst., ♀ profile.
88. " " Gerst., ♂, nodes and abdomen. × 3.
- 89a. " " Gerst., ♀, epinotum, dorsal view. × 8.
- 89b. " " Gerst., ♂, epinotum in profile. × 8.
- 90a. " *striata* Stitz, ♀, epinotum, dorsal view. × 8.
- 90b. " " Stitz, ♂, epinotum in profile. × 8.
- 90c. " " Stitz, ♀, nodes. × 4½.
91. " *nigra* Mayr, ♀, thorax and petiole. × 10.
92. " *nigerrima* Arnold, ♀, thorax and petiole. × 10.
93. *Triglyphothrix Arnoldi* Forel, ♀. × 14.
94. " *Constanciae* Arnold, ♀. × 16.
- 94a. " " Arnold, profile.
95. " *Marleyi* Forel, ♀, nodes, dorsal view. × 16.
96. *Tetramorium longicorne* Forel, ♀. × ca. 9.
- 96a. " " Forel, ♀, nodes in profile.
97. " *Joffrei* Forel, ♀, thorax and nodes. × 10.

A Monograph of the Formicidae of South Africa.

FIG.

98. *Tetramorium solidum*, var. *signata* Em., ♀, thorax and nodes. × 10.
99. " *Jauresi* Forel, ♀, thorax and nodes. × 10.
100. " *Popovici* Forel, ♀, epinotum and nodes. × 16.
101. " *setuliferum* Em., ♀. × 9.
- 101a. " " Em., ♂, thorax and nodes. × 5.
102. " *simulator* Arnold, ♀. × 10.
103. " *grandinode* Santschi, var. *hopensis* Forel, ♀, petiole. × 16.
(a) Dorsal view, (b) profile (seen somewhat from behind).
104. " *squaminode* Santschi, ♀, nodes. × 16.
105. " *Grassi* Em., ♀. × 16.
106. " *guineense* Mayr, race *striata* Stitz, ♀. × 9.
107. " (*Xiphomyrmex*) *fossulatum* Forel, ♀. × 10.
108. " " *Humbloti*, var. *victorensis* Forel, ♀. × 10.
109. " " *fossulatum* Forel, ♀, profile. × 16.

PLATE VIII.

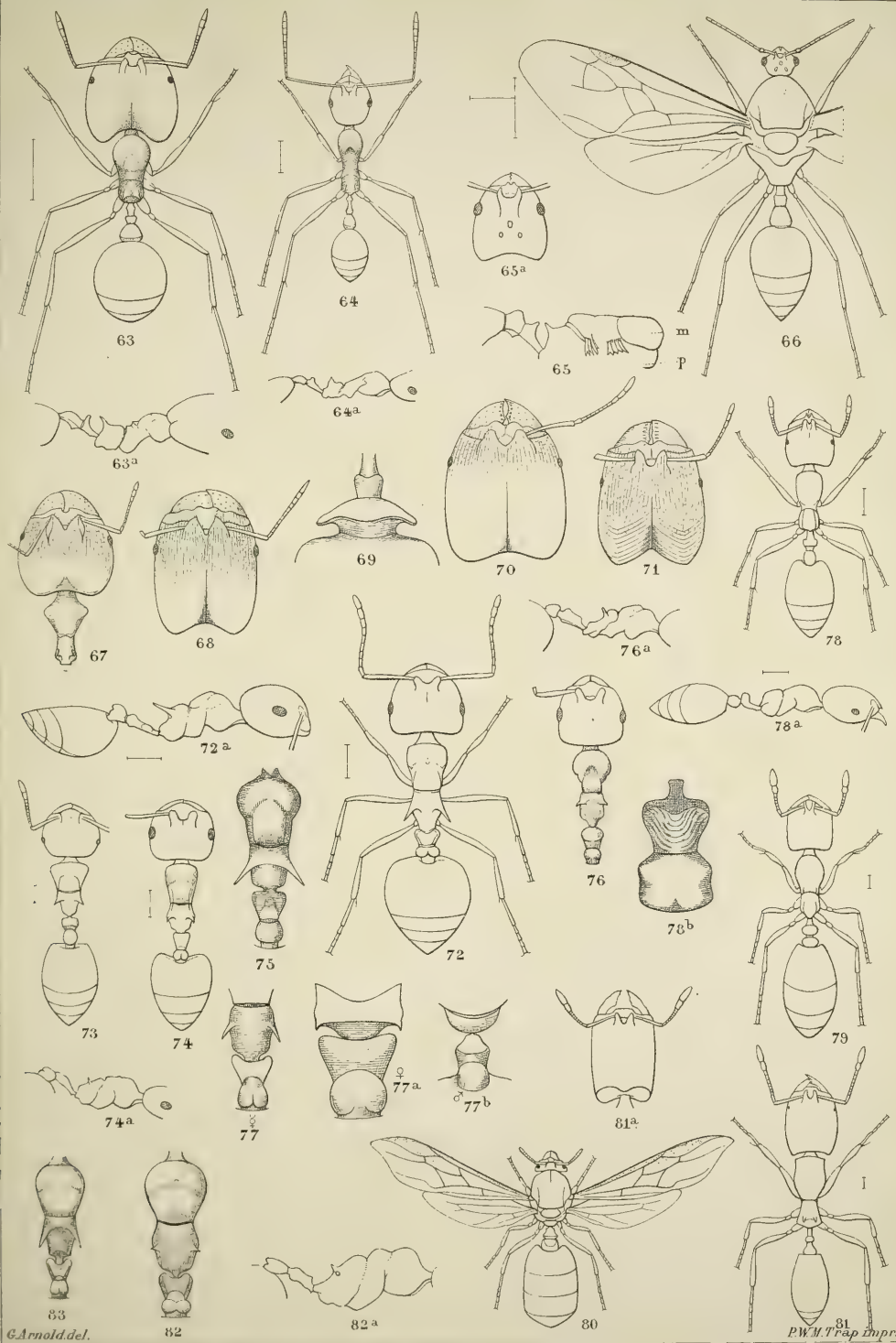
- 110a. *Tetramorium laevithorax* Emery, ♀, nodes. × 16.
- 110b. " " Emery, ♀, profile. × 16.
111. " *decem* Forel, ♀. × 12.
112. *Rhoptromyrmex transversinodis* Mayr, ♀. × ca. 14.
113. " " Mayr, ♀. × ca. 14.
114. *Calypptomyrme Arnoldi* Forel, ♀. × ca. 15.
- 114a. " " Forel, ♀, head in profile, showing the deep scrobe and the spatulate hairs.
115. *Meranoplus Peringueyi* Emery, ♀. × 9.
- 115a. " " Emery, ♀, profile of thorax. × 9.
116. " *nanus* André, race *nanior* Forel, ♀, thorax and petiole.
117. *Strumigenys Arnoldi* Forel, ♀. × 20.
- 117a & b. " " Forel, clavate and spatulate hairs.
- 117c. " " Forel, head. × 35.
- 117d. " " Forel, thorax and petiole, profile. × ca. 30.
118. " *Escherichi*, race *limbata* Forel, ♀, head. × 30.
119. *Cataulacus Baumi*, race *batonga* Forel, ♀. × 8.
- 119a. " " race *batonga*, Forel, profile. × 8.
120. *Acantholepis longinoda* Arnold, ♀. × ca. 10.
- 120a. " " Arnold, ♀, profile, thorax and abdomen. × ca. 10.
121. " *Foreli* Arnold, ♀. × 15.
122. " *egregia* Forel, ♀, thorax. × ca. 15.
- 122a. " " Forel, ♀, thorax, profile. × ca. 15.
- 122b. " " Forel, scale, seen from behind.
123. *Plagiolepis custodiens* Smith, ♀ maj. × 4½.
- 123a. " " Smith, ♀ maj, profile, thorax and petiole. × 4½.
124. " *Steingröveri* Forel, ♀ minima, profile, thorax and petiole. × 16.
125. *Polyrachis schistacea* Gerst., race *rugulosa* Mayr, ♀, thorax and petiole. × 4½.
- 125a. " " Gerst., race *rugulosa* Mayr, ♀, profile, thorax and petiole. × 4½.
126. " *Arnoldi* Forel, ♀, thorax and petiole. × 6.

Annals of the South African Museum.

PLATE IX.

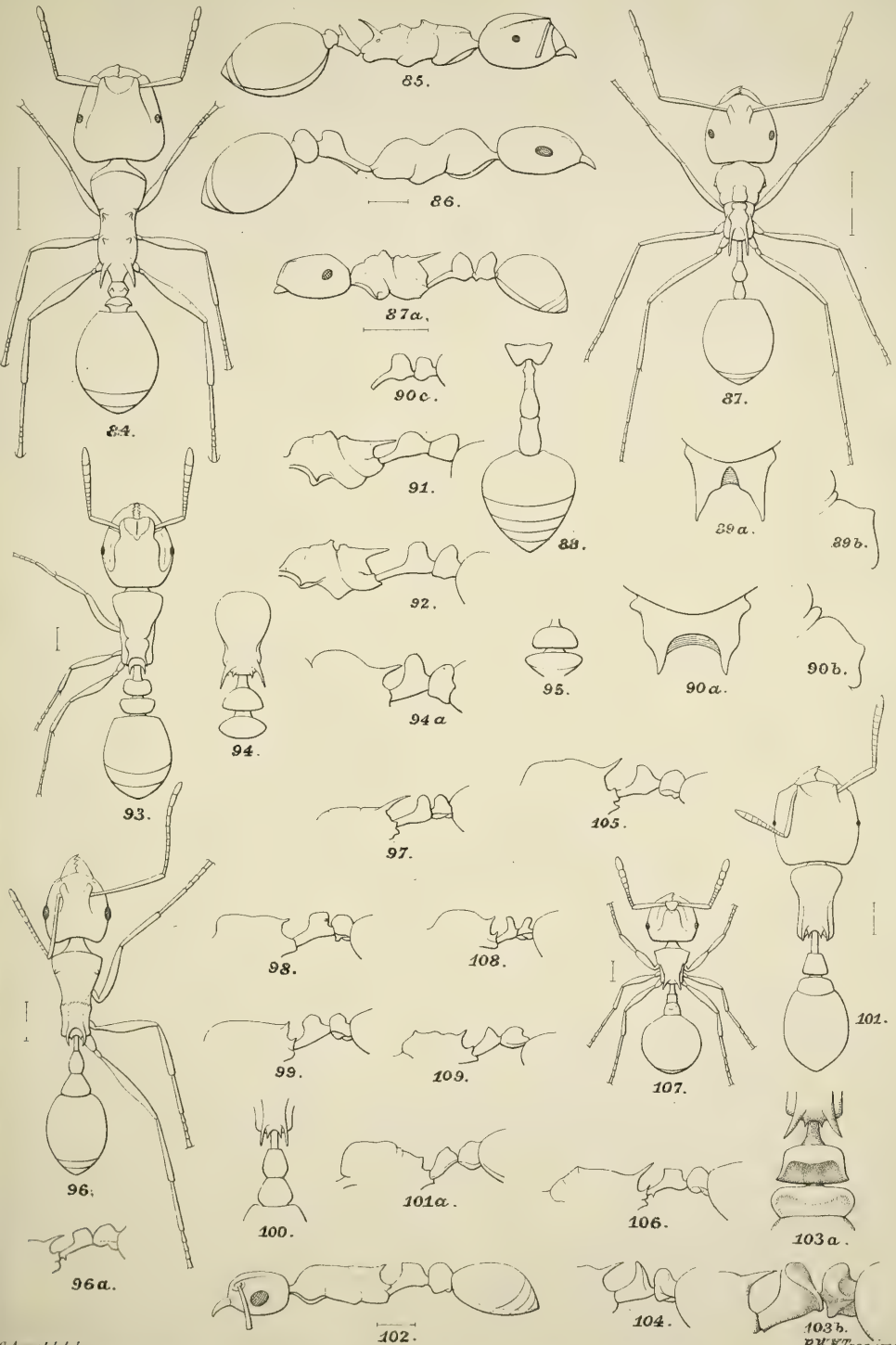
FIG.

- | | | | |
|-------|---|--|-------------------------------------|
| 127. | <i>Polyrachis gagates</i> Smith, | ♀, | } petiole, seen from in front. × 8. |
| 128. | " <i>militaris</i> Fab., | ♀, | |
| 129. | " <i>Schluteri</i> , race <i>indigens</i> | | |
| | Forel, | ♀, | |
| 130. | " <i>spinicola</i> Forel, | ♀, | |
| 131. | " <i>Revoili</i> André, | ♀, | |
| 132. | " <i>viscosa</i> , Smith, | ♀, | |
| 133. | <i>Prenolepis longicornis</i> Latr., | ♀. | × 9. |
| 134. | <i>Oecophylla smaragdina</i> Fab., | ♀. | × 5. |
| 134a. | " " | Fab., ♀, thorax and petiole, profile. | × 5. |
| 135. | <i>Camponotus troglodytes</i> , var. <i>rhodesiana</i> Forel, | ♂. | × 4½. |
| 135a. | " " | var. <i>rhodesiana</i> Forel, ♂, thorax, profile. | × 4½. |
| 136. | " <i>Petersi</i> Emery, | ♂, head. | × 4½. |
| 136a. | " " | Emery, ♀, head. | × 4½. |
| 136b. | " " | Emery, ♀, head. | × 4½. |
| 136c. | " " | Emery, ♀, thorax and petiole, profile. | × 6. |
| 136d. | " " | Emery, ♂, head. | × 9. |
| 137. | " <i>sericeus</i> Fab., | ♂, thorax and petiole, profile. | × 6. |
| 137a. | " " | Fab., ♂, thorax and petiole. | × 6. |
| 138. | " <i>Mayri</i> Forel, | ♂, thorax and petiole, profile. | × 6. |
| 139. | " <i>Braunsi</i> Mayr, | ♂, thorax and petiole, profile. | × 6. |
| 140. | " <i>fulvo-pilosus</i> De Geer, race <i>storeatus</i> Forel, | ♂, head. | × 4. |
| 141. | " <i>ostiaris</i> Forel, | ♂, head, thorax and petiole, profile. | × 6. |
| 142. | " <i>longipes</i> Gerst., | ♀ minor, head. | × 5. |
| 142a. | " " | Gerst., ♀ minor, node. | × 5. |
| 143. | " <i>mystaceus</i> , Emery, | ♂, head, profile. | × 5. |
| 143a. | " " | Emery, ♂, head. | × 5. |
| 143b. | " " | Emery, ♀ minor, head. | × 5. |
| 144. | " <i>cuneiscapis</i> Forel, | ♀, base of scape. | × ca. 10. |
| 145. | " <i>scalaris</i> Forel, | ♀, thorax and petiole, profile. | × 9. |
| 146. | " <i>Dofleini</i> Forel, | ♀, thorax and petiole, profile. | × 6. |
| 147. | " <i>angusticeps</i> Emery, | ♀ minor, head. | × 9. |
| 148. | " <i>emarginatus</i> Emery, | ♂, clypeus. | × 16. |
| 149. | " <i>maculatus</i> Fab., | ♀ minor, thorax. | × 9. |
| 149a. | " " | Fab., ♀ minor, thorax, profile. | × 9. |
| 150. | " " | Fab., ♂, abdomen. | × 5. |
| 151. | " " | Fab., race <i>Liengmei</i> Forel, var. <i>Hansingi</i> Forel, abdomen. | × 5. |
| 152. | " " | Fab., race <i>Liengmei</i> Forel, var. <i>importunoides</i> , abdomen. | × 5. |
| 153. | " " | race <i>pictiventris</i> Mayr, abdomen. | × 5. |
| 154. | " " | race <i>Traegaardhi</i> Santschi, var. <i>muger</i> , Forel, abdomen. | × 5. |
| 155. | " <i>crepusculi</i> Arnold, | ♀ minor, head. | × 16. |
| 155a. | " " | Arnold, ♀ minor, head, profile. | × 16. |



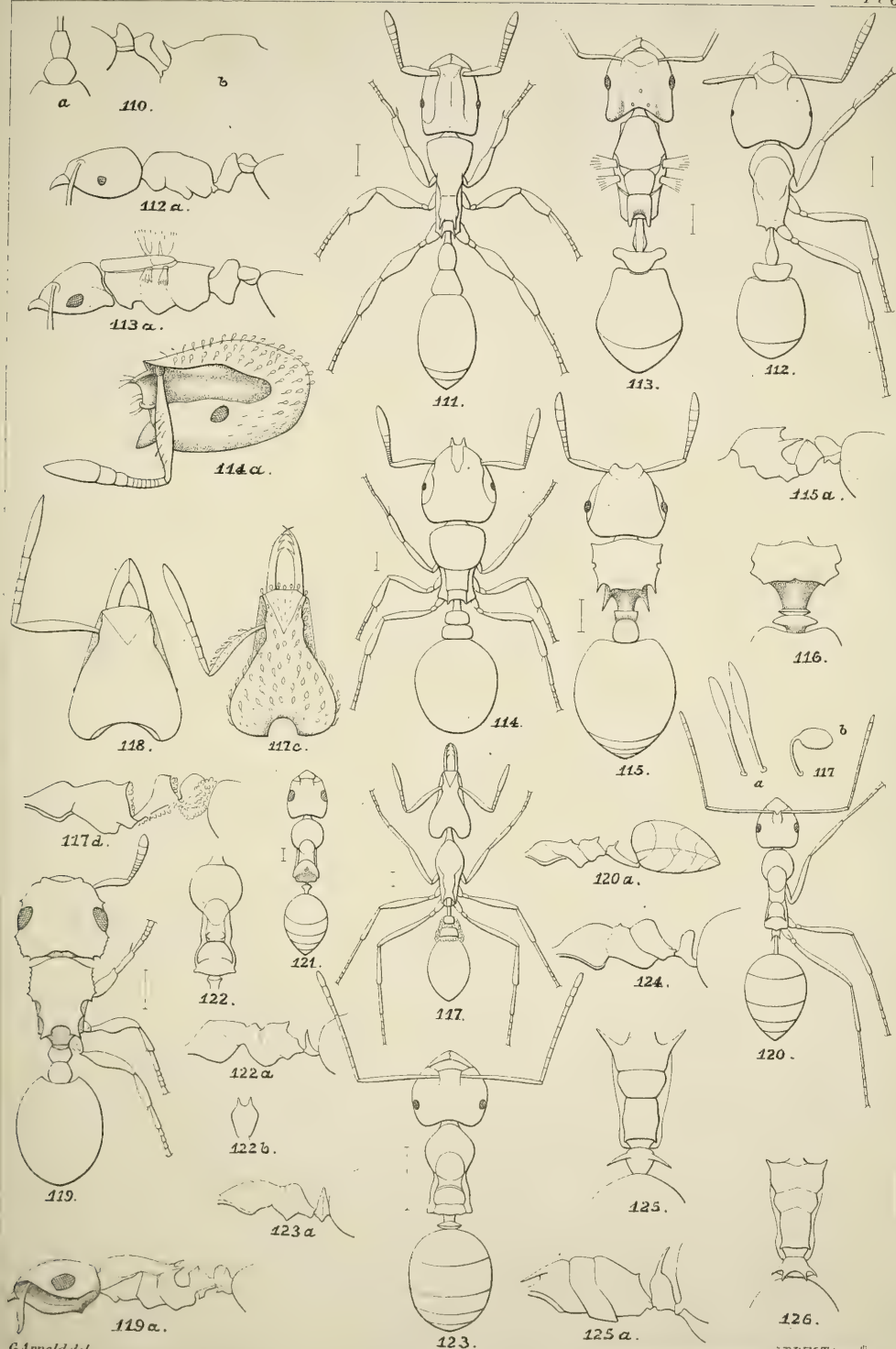
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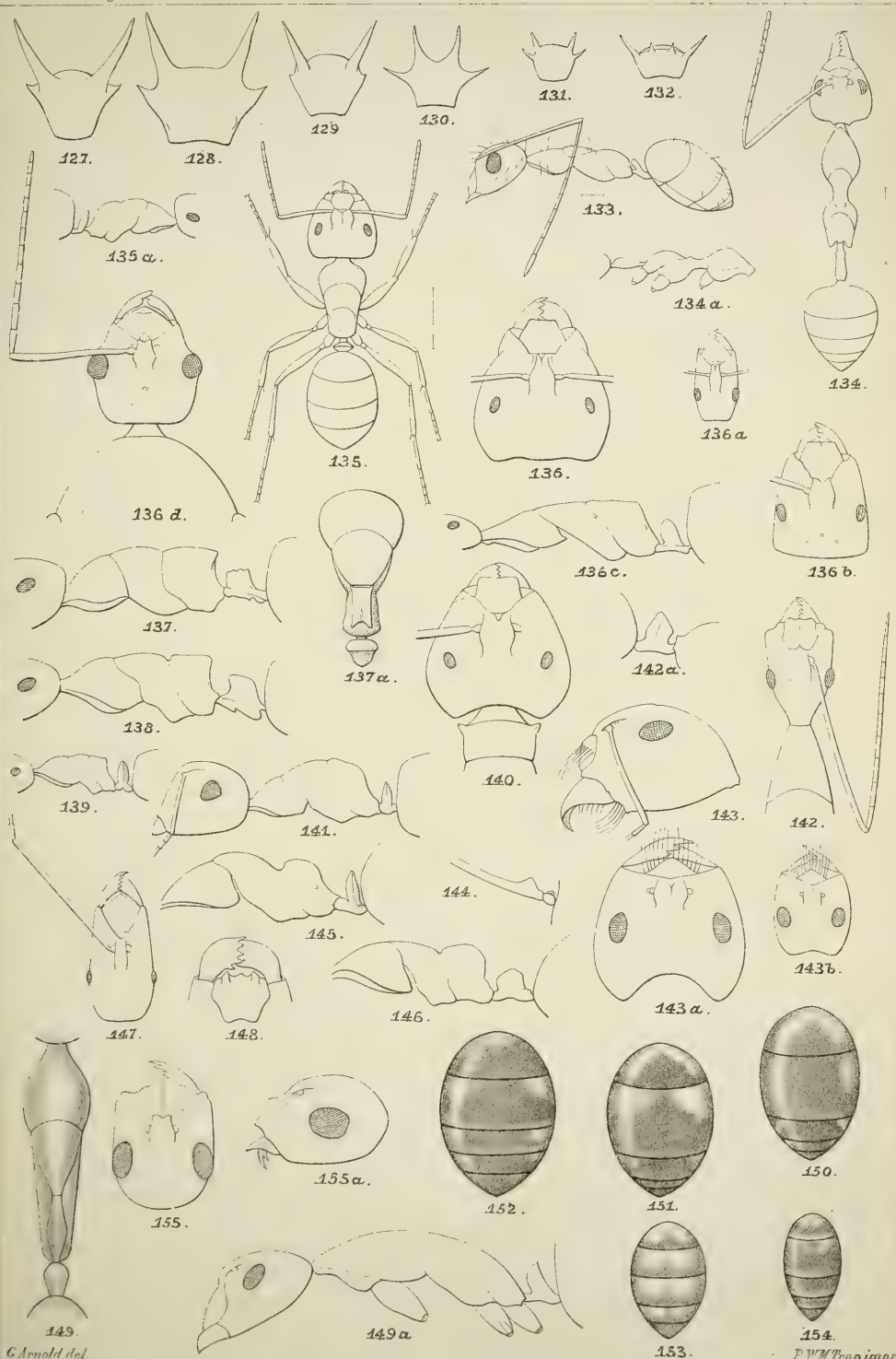
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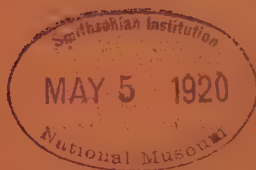
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- 1.—*A Monograph of the Formicidæ of South Africa (Myrmicinæ).* By GEORGE ARNOLD, M.Sc., A.R.C.S., F.E.S.,
Curator of the Rhodesia Museum, Bulawayo, pp. 403–578.



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TRIBE CATAULACINI.

CATAULACUS INTRUDENS, Smith, var. INTERMEDIUS, Santschi.

Ann. Soc. Ent. France, vol. 85, p. 287, ♀, 1916.

“ ♀. 4.2–4.5 mm. long, the head deflected. Dull. Sculpture a little stronger than in *intrudens*, Smith, but much less pronounced than in *rugosus*, Forel, and *C. Bequaerti*, Forel. The rugae on the head are further apart (about 13 between the eyes), and the transverse rugae form a more distinct reticulation. The declivity of the epinotum (apart from a few transverse striae between the spines) and the anterior face of the 1st node are smooth. The longitudinal sulci on the petiole more regular. The abdomen punctured, also fairly sharply striate at the base and slightly so at the apex. Pilosity white, intermediate in quantity and length between *C. Bequaerti* and *intrudens*. Head a little less narrowed in front than in *intrudens*, more than in *Bequaerti*, relatively smaller than in those two species, with the hind margin straight. Thorax as elongate as in *Bequaerti*, but with the sides dentate as in *intrudens*. The spines are closer together, more clearly parallel and as acute as in *intrudens*. First joint of the petiole subconical as in the latter species, with the upper face smooth and very oblique in front. Second joint as wide as the 1st, with a fairly distinct median groove on the anterior and upper faces. Abdomen a little less convex than in *intrudens*, a little more than in *Bequaerti*. Colour as in those species.”

Bembesi, S. Rhodesia. (S.A.M., R.M., G.A. colls.)

GENUS CATAULACUS.

I have endeavoured to draw up a key to the six forms which I have seen, but in view of the trifling distinctions on which authors have seen fit to erect new species in this genus, too much reliance should not be placed on it. In fact, a review of these six forms leads me to the belief that we have only two nuclei of species, one of which is *C. micans*, Mayr, with *durbanensis*, Forel, *Lujae*, Forel, and *Marleyi*, Forel, more or less intimately associated with it, and the other *C. Baumi*, Forel, with its allied forms, *batonga*, Forel, *bulawayensis*, Forel, and *intrudens* var. *intermedius*, Santschi.

Key to the ♀ ♀ *Cataulacus*.[✓]

- (10). 1. Head clearly narrowed in front of the eyes.
- (7). 2. Base of abdomen only feebly striate longitudinally.

- (4). 3. Head not very strongly striate, and with the transverse anastomoses almost obsolete; thorax coarsely and longitudinally rugoso-striate, transverse rugae few, not clearly reticulate . . . *Marleyi*, Forel.
- (3). 4. Head longitudinally striate, also reticulate; thorax clearly reticulate-rugose.
- (6). 5. Inner pair of teeth on occipital angles usually smaller than the outer pair; spaces between the reticulations on the head shallow.
Baumi, Forel, race *batonga*, Forel.
- (5). 6. Inner pair of teeth on occipital angles usually as large, or almost as large as the outer pair; the spaces between the reticulations on the head fairly deep . . . *batonga* var. *bulawayensis*, Forel.
- (2). 7. Base of abdomen deeply sulcate-striate.
- (9). 8. Basal half of abdomen sulcate-striate, the striae continued to the apex, but becoming rather feeble over the middle
micans, Mayr, race *durbanensis*, Forel.
- (8). 9. Basal fourth only of the abdomen sulcate-striate, the striae altogether absent from the middle two-fourths, the apical fourth feebly striate;
intrudens, Smith, var. *intermedius*, Sant.
- (1). 10. Head almost quadrate, or only feebly narrowed in front of the eyes
brevisetosus, Forel, race *Lujae*, Forel.

TRIBE PHEIDOLINI, Emery.

This tribe includes the two genera *Messor* and *Pheidole*. The former has polymorphic ♂♂, the different forms varying mainly in size, the structure being but little modified. On the other hand, in *Pheidole* the ♂♂ are strongly dimorphic and consist of large-headed ♀♀ and ordinarily shaped ♂♂, the two not being connected by forms intermediate in size or structure except in the small sub-genus *Allophaidole*, in which intergrading forms occur. *Aphaenogaster*, Mayr, *Goniomma*, Forel, *Messor*, Forel, and *Ischnomyrmex*, Mayr, have been reduced to the rank of sub-genera of *Stenamma*, Westwood, by Prof. Emery. They are undoubtedly all closely related, but since they continue to be treated by recent authors as distinct genera, *Messor* is retained as a distinct genus in the following pages.

GENUS MESSOR, Forrel.

Ann. Soc. Ent. Belg., vol. 34, C.R., p. lxx, 1890.

Aphaenogaster pars Mayr, *Atta*, Latreille, etc.

Characters.

♂. Polymorphic. The ♂♂ differ chiefly in size, very little in structure. For convenience one may divide the ♂♂ into major, minor and media, but there are no sharply defined categories in this

caste, a complete gradation existing between the largest at one end of the scale and the smallest at the other. The smaller the worker the smaller becomes the head in relation to the thorax, and the dorsal profile of the thorax tends to a more even and continuous convexity.

♂ major. Antennae 12-jointed, flagellum filiform and without a distinct club. Clypeus nearly flat, the median area produced back between the frontal carinae and hardly raised at all. Frontal carinae short, the free edge usually more or less raised. Eyes rather small. Mandibles triangular and massive, more or less dentate. Thoracic sutures distinct. Thorax narrower than the head; pronotum much larger than the mesonotum; constricted and deeply depressed at the meso-epinotal suture. Epinotum bidentate or unarmed. First segment of petiole conical, pedunculate in front; 2nd segment transversely globose. Abdomen oval, the 1st segment as long as the rest taken together.

♀. Similar to the ♂ major, but the head is smaller and the eyes slightly larger; ocelli small. The thorax is massive, much higher than the head, almost as high in the middle as it is long. Pronotum vertical, not exposed above. Anterior wing with two closed cubital cells.

♂. Antennae 13-jointed; the scape half as long as the head. Mandibles small, distinctly dentate. Clypeus narrow. Eyes not very large and the ocelli much smaller than usual in this sex. Thorax as in the ♀. Nodes of petiole shorter and flatter. Abdomen subglobose, pointed and narrower at the apex.

The members of this genus differ from the closely allied genus *Aphaenogaster* in their diet. The latter, when not entirely carnivorous, have a mixed diet, whereas the species of *Messor* are graminivorous and harvesting ants. *M. barbarus*, as its name rightly indicates, has its headquarters in North Africa, but including its numerous subspecies and varieties has a much more extended range, which comprises all the Mediterranean region.

In South Africa it is represented by the subspecies *capensis* and several varieties of the same.

M. BARBARUS, Linn., race CAPENSIS, Mayr.

Syst. Nat. Ed. 12 a, vol. ii, p. 962, ♂, 1767.

Leach, Entom. Archiv., vol. i, p. 4, ♀, ♀, ♂, 1827.

(Race) Verh. Zool. Bot. Ges. Wien, vol. 12, p. 743, ♀, 1862.

„ „ „ „ „ „ vol. 16, p. 896, ♀, ♂, 1866.

„ Reise d. Novara, Zool., vol. ii, Formicid., p. 87, ♀, 1865.

"♀. 6-11 mm. ♀ major brownish-black, frontal carinae, apex

of the scape, flagellum, articulations of the legs and the tarsi castaneous; ♀ minor brown, mandibles, flagellum and tarsi yellowish-brown; mandibles strongly striate; head very closely striate. Thorax as in *Aphaenogaster structor*, striate; epinotum with two tubercles; nodes striate or rugulose, the 2nd node smoother; abdomen smooth and shining. . . . The yellowish and outstanding pilosity is moderate, on the legs fairly abundant. The mandibles are fairly coarsely and longitudinally striate, in the smaller ♀ ♀ with about 12 teeth, edentate in the larger ♀ ♀. The head has a silky gloss, and in the ♀ major is very closely and longitudinally striate, the striae curving round the eyes and antennae sockets; in the ♀ minor the striae are less regular and unequal, weaker and not so straight on the frons, transverse on the vertex. The feebly shining thorax is like that of *A. structor*. The pronotum above is transversely and at the sides longitudinally striate; the mesonotum rugulose; the epinotum above transversely, at the sides longitudinally striate, not quite dentate above on each side, but nevertheless angularly dilated. The nodes are rounded above; in the ♀ major transversely striate and partly rugulose at the sides; in the ♀ minor very shallowly rugulose, almost smooth and shining. Abdomen smooth and very shining. Cape of Good Hope.

“♀. 15 mm. Brownish-black, head dark ferruginous, partly castaneous; articulations of the legs and tarsi rufescent; very sparsely pilose; head as in the ♀ major; pronotum densely and longitudinally striate, mesonotum shining, longitudinally striolate, scantily punctured, and with three large and smooth patches; scutellum shining and almost smooth, the sides striate; epinotum elongate and bituberculate, the sides strongly striate; nodes of the petiole striato-rugulose; abdomen very shining, smooth and almost glabrous.

“♂. 8.3 mm. Black, shining, mandibles and articulations of the legs and tarsi fuscous; not very densely pilose, the abdomen sparsely pilose; mandibles striate, clypeus with transverse rugae; cheeks, antennal foveae and the frons partly longitudinally striate, the middle of the latter finely rugulose; the vertex near the anterior ocellus radiately rugose, behind and outside the ocelli very finely and shallowly rugulose-punctate; pronotum finely rugulose-punctate; mesonotum longitudinally rugoso-striate, with some scattered punctures, smooth in the middle in front; disc of scutellum smooth; epinotum oblique, obtusely tuberculate, finely and transversely striate at the base; sides of thorax striate; nodes of petiole very finely rugulose; abdomen smooth in front, very finely and shallowly coriaceous behind; wings subhyaline, stigma and costa ochreous.”

Some specimens which have been determined by Dr. Forel as belonging to the above variety differ from Mayr's description in certain minor details, but in view of the tendency to variation exhibited by this species, I am unwilling to separate them as a well-marked variety by the use of a distinct name. To supplement Mayr's description, which refers mainly to the sculpture, a fuller description of these specimens is added herewith. ♂ major. 11 mm., head including closed mandibles 2.9 mm. long \times 2.5 mm. wide. Dark brownish-black, mandibles dark reddish-brown, the epinotum sometimes a little lighter than the rest of the body, tarsi reddish-brown. Head, thorax and abdomen very sparsely pilose, the hairs yellowish, short and semi-erect, pubescence absent except on the mandibles, legs and antennae.

Head longitudinally striate, the striae as wide as the finely punctured interspaces; the striae converge somewhat in the middle, but bend outwards at the anterior and posterior corners, and converge inwards on the anterior margin of the clypeus. The mandibles are longitudinally striate, with elongate punctures between the striae. Pronotum longitudinally striate above, at the sides more or less concentrically, the striae less regular than on the head. Nodes of petiole finely rugulose, and also very finely and transversely striate, especially on the sides and near the posterior margins. Head and thorax dull, but the spaces between the striae slightly shining; legs very shallowly and sparsely punctured, slightly shining.

Head, excluding the mandibles, quadrate, almost rectangular, the sides and posterior angles feebly convex, the hind margin very shallowly concave or nearly straight. Eyes convex, rather small, placed a little behind the middle of the sides. Anterior margin of the clypeus straight. Frontal area well defined. Frontal carinae short. Scape of antenna thin, incrassate apically, strongly curved in its basal half, extending back as far as the hind margin of the head; all the joints of the flagellum longer than wide. Mandibles with about 5 very blunt teeth.

Thorax much narrower than the head. Pronotum as wide as long in the middle. Mesonotum narrow, almost cylindrical, higher than the lateral portions of the pronotum; the dorsal profile of the promesonotum forms a continuous convexity. Pro-mesonotal suture distinct but shallow, the meso-epinotal suture deep. Dorsum of epinotum straight, rising slightly from base to apex, quite twice as long as wide, shallowly excavated lengthwise, the sides subvertical, the posterior angles prominent and almost dentiform, the declivity vertical and concave transversely. First joint of petiole with a moderately long

peduncle, seen from the side bluntly wedge-shaped; the anterior face of the node vertical, the posterior dorsal face convex and shallowly grooved lengthwise in the middle; 2nd node wider than the 1st, more or less campaniform. Abdomen elongate ovate, the apical margins of all the segments pale brownish.

♀ media, 7 mm. ♀ minor, 5-5.5 mm. These differ from the ♀ major as follows: The striation of the head and thorax is weaker; the head is a trifle longer than wide (in the ♀ major a little wider than long), the sides of the pronotum less convex, the emargination of the posterior dorsal face of the first node less pronounced, the sides of the second node less convex.

Willowmore, Cape Prov.; Durban. (S.A.M., R.M., G.A. colls.)

Var. *PSEUDOAEGYPTIACA*, Emery.

Ann. Mus. Civ. Genoa, 2, vol. 1, p. 384, ♀, 1884.

"Not exceeding 8 mm., smaller than the race. Head and thorax more or less ferruginous, with the sculpture of the duller varieties of *aegyptiaca*. On the head the sculpture is close and even, with fine and prominent longitudinal striae, often interrupted and lightly undulated. The thorax is dull; the epinotum hardly angular, without prominent teeth. Cape Prov."

The commonest form of *capensis* in S. Rhodesia has been referred to the above variety by Dr. Santschi, to whom I sent some typical examples of a series which had previously been determined by Dr. Forel as simple race *capensis*, from which they obviously differ not inconsiderably in certain features. Nevertheless, they do not quite agree with Emery's variety, since they attain a greater size and have the thorax a good deal more coarsely sculptured than in the few examples of *aegyptiaca* which I have seen. They are also very much like var. *proba* (Forel), to judge by the description only, so that for the present I prefer to place them with the variety to which Dr. Santschi has assigned them. They are characterised as follows:

♂ major. 9.5 mm. Head, including the closed mandibles, 3 mm. long × 3 mm. wide. Head, thorax and petiole varying from brick-red to reddish-brown, abdomen piceous, the extreme base of the first segment sometimes with a reddish tinge; legs brownish-red, the tarsi and tibiae a little darker. The striation of the head is much more feeble than in *capensis* (*i.e.* those forms from Willowmore and Durban described above), and the pronotum is transversely rugulose instead of longitudinally striate. The pro-mesonotum is much more convex and much higher above the level of the epinotum, and its

dorsal profile is not a continuous convexity, being broken at the anterior third of the mesonotum by a shallow depression. The dorsum of the epinotum is more deeply excavated longitudinally and has wider and more obtuse lateral angles; the declivity is oblique, not vertical as in *capensis*. The first node of the petiole is thinner above, the posterior dorsal face longer and sloping more steeply backwards; the second node is much more transverse and more convex from back to front and is one and two-thirds wider than long.

♀ media, 8 mm. ♀ minor, 5.5 mm. These differ from the ♀ major in having the head longer than wide. The dorsal profile of the promesonotum forms a continuous curve in the ♀ minor, and is barely interrupted in the ♀ media. The first node is higher, the summit very feebly emarginate; the second node is longer, quite as long as wide in the ♀ minor, and almost so in the ♀ media.

♀. 14 mm. Pronotum very finely striate and somewhat rugulose. The mesonotum without any distinct impunctate areas.

♂. 9.7 mm. Abdomen smooth and shining all over. Epinotum without a trace of tubercles; mesonotum shallowly punctate, only the posterior fourth feebly and longitudinally striate.

Otherwise Mayr's description of the sexes of *capensis* applies equally well to these specimens. However, the following characters should also be noted. In both sexes the mesonotum overhangs the pronotum so that the latter is not visible from above. The mesonotum and scutellum have a median longitudinal impression, less pronounced in the ♂ than in the ♀. In the ♂ the dorsum of the epinotum is very oblique and joins the declivity in a gradual curve. In the ♀ the sides of the declivity are marginate, the margins ending above in slight angles (hardly tubercles). The petiole of the ♀ is like that of the ♀ major, but the peduncle of the first joint is shorter, the node more deeply emarginate above, its anterior face vertical, the posterior face rounded and subvertical. The nodes in the ♂ are much flatter and more quadrangular than in the ♀ or ♀. Legs of the ♂ long and slender. Wing nervures in both sexes yellowish-brown.

This variety is very common in the neighbourhood of Bulawayo. It is eminently a harvesting ant, usually collecting the seeds of one particular kind of grass. The rejected husks of these seeds are deposited in a circle all round the entrance of the nest, one half of the circle being generally deeper than the other, which may be due to the prevailing winds. These rubbish-heaps when made by a populous colony sometimes reach very large dimensions, covering as much as one square foot of ground, and from one to three inches deep. The site of such a nest is very plainly indicated by these accumulations, since

the husks are bleached almost white by the action of the sun. The nests of this ant appear to be very free of myrmecophilous insects, and even the ubiquitous Thysanuran is rarely to be found in them. The ants appear to have definite foraging grounds, to which access is obtained by well-marked and smooth paths leading from the nest in various directions.

Var. SCHENCKI, Forel.

Schultze, Reise Süd. Afrika, vol. iv, p. 13, ♂, 1910.

"♂ major. 9 mm. Entirely black. Sculpture a little less close and coarse; pilosity on the body scantier. Pronotum with less pronounced lateral humps. Epinotum rounded, without teeth. Head evenly and longitudinally striate. Petiole as in the race."

"Bethanien, Great Namaland. (Schenck.)"

Var. DECIPIENS, Forel.

Ann. Soc. Ent. Belg., vol. 49, p. 177, ♀, 1905.

"♀. 4.5-9 mm. Head of the ♀ maxima of 8-9 mm., transversely rectangular, one-sixth wider than long. Epinotum cuboid, rounded between the two faces, usually unarmed, sometimes bidentate. First node as in the type of *capensis*, but with a shorter peduncle than in the other races; both nodes thick. Head and thorax fairly strongly and irregularly striate. A few striae on the nodes. Abdomen with a few large piligerous punctures at the base. Like *capensis*, to which it stands in the same relation that the race *capitatus* does to *barbarus*, but much smaller, and entirely black. ♀ 10-11 mm. Like the ♀.

"Natal and Cape Colony (Wroughton)."

Var. PROBA, Forel.

Sitzungsb. K. A. Wiss. Munich, p. 266, ♀, 1911.

"♂ major. 10-11 mm. Black, head red, thorax with reddish-brown markings. Epinotum entirely unarmed. Pronotum rounded as in the var. *decipiens* Forel. Head sharply striate, but not, as in the type of *capensis*, reticulate-punctate in between the striae. Thorax and petiole more coarsely and sharply sculptured than in *decipiens*.

"Bothaville, O.F.S. (Dr. Brauns)."

BARBARUS, Linn., race LUBBERTI, Forel.

Schultze, Reise Süd. Afrika, vol. 4, p. 13, ♀, 1910.

“♀. 5–8 mm. Shape like that of race *capitatus*, but somewhat more robust. Head of the large ♀ wider, distinctly wider than long, strongly concave behind. Scape also similar but shorter; the joints of the flagellum shorter and thicker. Sides of the head straight as in race *capensis*, Mayr. Thorax as in *capensis*, but the epinotum is not cuboid but rounded, the dorsum merging into the declivity, with two feeble, elongate and ridge-like tubercles. First node much thinner than in *capensis* and its var. *decipiens*, emarginate above, and behind with a longitudinal impression which joins the emargination above.

“Head closely longitudinally striate as in *capensis*, but not so deeply, somewhat finer and more shining, not so strongly reticulate-punctate between the striae. The pro-mesonotum is much more finely and closely reticulate-rugose, duller, also less angular and evenly rounded. Epinotum transversely striate. Nodes dull, finely reticulate-punctate. Abdomen shining, finely and shallowly reticulate, with scattered punctures. The upper surface of the body almost glabrous, with only rare bristly hairs. Under surface of the head with some not very long ammochaetae. Legs and scapes with decumbent pubescence, much more abundant than in typical *barbarus*. Red, the posterior two-thirds of the abdomen dark brown. Antennae and legs reddish-brown.

“G.S.W.A. (Lübbert); Okahandja (Peters).”

M. DENTICORNIS, Forel.

Loc. cit., p. 14, ♀, ♀, ♂.

“♀. 5.5–11 mm. Slender, with a relatively small head (in the largest ♀ ♀ 2.8 mm. long and wide), but with the typical mandibles of the genus. Mandibles strongly curved, with two stronger teeth in front, indistinctly dentate behind (often quite plane through use), with a very broad terminal margin, fairly closely striate. Anterior margin of clypeus convex. Frontal area very large, rounded behind. Frontal carinae straight, feebly convergent posteriorly. Head somewhat longer than wide in the ♀ min. only, a little wider in front than behind (in the larger ♀ even wider behind than in front), the sides almost straight, the posterior margin fairly convex in the ♀ minor or straight in the ♀ major, the posterior angles strongly rounded. Eyes distinctly large, convex, placed in about the middle, shorter than their distance from either the front or back of the head. The scape extends

beyond the posterior margin by about one-fourth of its length in the ♀ minor, and by about one-seventh in the ♀ major. Close to the base it has a transversely-placed projection or tooth . . .; the scape is widely curved beyond the level of the projection. Flagellum without a distinct club, all the joints subequal in length, the first about three times longer than wide. Pro-mesonotum evenly arched. The long and slender mesonotum is almost cylindrically narrowed. Epinotum almost cuboid, the dorsum horizontal, nearly twice as long as wide, the declivity almost vertical; between them are two broad flat teeth, or two sharp and nearly dentiform angles, the space between the angles excavated. First node wedge-shaped, with a broad peduncle in front, as high as thick at the base, emarginate above, and with a longitudinal impression behind. Second node also narrowed above. Legs very long, thin and slender. Head, pronotum and petiole feebly shining, in the ♀ minor closely, finely and rather irregularly reticulate, in the ♀ major fairly coarsely striate in addition; mesonotum and epinotum (including the declivity) coarsely and transversely rugose or striate, the sides longitudinally striate below. Abdomen shining, shallowly and finely coriaceous. Pilosity sparse, reddish and short. Legs and antennae with decumbent, or sometimes oblique, long hairs. A fringe of long red hairs on the anterior margin of the clypeus and some not very long ammochaetae under the head. More or less dark brown or brownish-black; mandible and tarsi yellowish to reddish, flagellum and legs brownish-yellow to reddish-brown.

“♀. 10·3–13 mm. Thorax almost as wide as the head. Disc of mesonotum smooth, with sparse, piligerous punctures; the rest of the thorax coarsely and unevenly rugose. The epinotum with very feeble and broad tubercles. Wings fairly long, almost vitreous (slightly tinged with yellow), costa and nervures brown. Otherwise just like the ♀ major but often with a more brightly coloured head. The tooth on the scape of the antenna a little smaller. Legs often quite red.

“♂. 8·5 mm. The tooth on the scape very distinct. Mandibles with 7 or 8 teeth. Head longer than wide, with a very distinctly, feebly convex hind margin. Second joint of the flagellum longer than the first. The epinotum forms a complete oblique plane, hardly convex. Head reticulate-punctate, almost dull. Thorax irregularly and fairly coarsely rugose, shining. Otherwise like the ♀ minor. Black; legs, base of the mandibles, antennae, apical margins of the abdominal segments and the pilosity brown; apical half of the mandibles reddish.

“A harvesting ant (*Aristida* grass, *Augea capensis*, etc.).

“Luderitzbucht, Kammagas and Steinkopf, Little Namaland (Schultze); Steckstown, Cape Prov. (Wartmann).”

Also at Kimberley, and Ababis, S.W. African Protectorate (R. W. Tucker). These agree with Forel’s description in every way except the colour, which is darker, almost pitch-black, the tarsi and the apex of the flagellum dark reddish-brown. From an examination of these specimens and of a co-type (♂ media) in my possession, it appears to me that the emphasis laid on the presence of a tooth on the scape is somewhat misleading. Unless seen at a certain angle from above, this dentiform projection at the base of the scape is by no means conspicuous, and moreover, a similar though smaller tooth occurs in *capensis* and its var. *pseudoaegyptiaca*. *Denticornis* differs from the latter species chiefly in its much more shining integument, in its feebler and more superficial sculpture of the head, and by its narrower form.

Var. PARVIDENS, Forel.

Loc. cit., p. 15, ♂.

“♂. Differs from the type by the much smaller tooth on the scape. Some specimens have also more obliquely exerted hairs on the tibiae.

“Kubub, Great Namaland; under stones (Schultze).”

Var. BRUNNI, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 444, ♂, 1910.

“♂. 6·8–5 mm. Allied to var. *parvidens* but smaller, of a light brownish-red, with the tarsi, antennae and mandibles yellowish-red or reddish-yellow. The sculpture of the head is finer and closer, and the occiput is transversely striate (longitudinally so and more rugose in the type of the species and var. *parvidens*).

“S. W. Africa (Brunn); Steckstown, Cape Prov. (Wartmann).”

M. BRAUNSI, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 138, ♂, 1913.

♂. 5·5–8·3 mm. Head and abdomen yellowish-brown, paler in the ♂ media and minor. Thorax and petiole brownish-yellow in the ♂ major, dirty ochreous in the smaller ♂ ♂. Legs and antennae ochreous, mandibles light brownish-red, the masticatory margin dark brown. Pilosity coarse, erect and reddish; a very fine pubescence

only on the legs and antennae. Head and thorax moderately, the abdomen very shining. Head finely longitudinally striate, the striae almost obsolete on the occiput. Thorax and nodes feebly reticulate, the pronotum also feebly striato-rugulose transversely. Epinotum strongly and transversely striate. Abdomen and legs smooth. In the smaller ♀♀ the sculpture is almost entirely effaced except on the epinotum.

Very similar to *denticornis*, Forel, with which it should perhaps be placed as a race. It differs from that species as follows: It is smaller and more robust. The thorax is shorter and the pro-mesonotum more convex; the epinotum is also more convex, rounded and without teeth, not angular between the two faces. The nodes of the petiole are more convex above and not so high; the 2nd node is as long as wide (slightly wider than long in *denticornis* in the ♀ major). The scape is toothed at the base, but the tooth is less acute.

Willowmore, Cape Prov. (Dr. Brauns). (S.A.M., R.M., G.A. colls.)

GENUS PHEIDOLE, Westwood.

Ann. Mag. Nat. Hist., vol. 6, p. 87, 1841.

Characters.

♂. Antennae 12-jointed, usually very short in proportion to the length of the head; club 3-jointed, fairly distinct. Head extremely large, disproportionately so compared with the rest of the body. The back of the head usually deeply emarginate, so as to divide that region into two lobes; a median occipito-frontal sulcus usually well defined. Clypeus short, especially at the sides, the median portion produced backwards between the frontal carinae. The frontal area generally depressed. The frontal carinae short, raised at the sides so as to furnish a slight depression in front to accommodate the base of the scape. Mandibles broad, triangular, indistinctly dentate. Pro- and mesonotum much raised above the level of the epinotum and forming a hump. The pronotum is usually more or less angularly produced at the sides, or even bituberculate. Mesonotum frequently with a transverse impression, behind which lies a more or less distinct scutellar region. This is sometimes margined above by a transverse torus or hump. Behind the scutellum a fairly well-defined portion of the metanotum is often present (in the majority of ants not visible in the ♀). Epinotum armed with two spines or teeth. First node of petiole wedge-shaped or conical, the peduncle in front very short. Second node with the sides produced into angles

or spines, seen from above, more or less lenticular or lozenge-shaped. Abdomen oval, the 1st segment larger than the remaining segments taken together.

♀. Antennae 12-jointed, usually very long, rarely shorter than the head and thorax together. Head of normal proportions, the occiput not emarginate, but generally convex. Thorax longer than in the ♂; the pro-mesonotum not gibbous as in the ♂, but nevertheless retaining (on a much reduced scale) the general features exhibited in that caste; the scutellum hardly defined, the metanotum not at all. Epinotum bispinose or bidentate. First node of petiole with a fairly long peduncle, the node much thicker above than in the ♂; the 2nd node globose or campaniform, rarely transverse. Abdomen relatively longer than in the ♂.

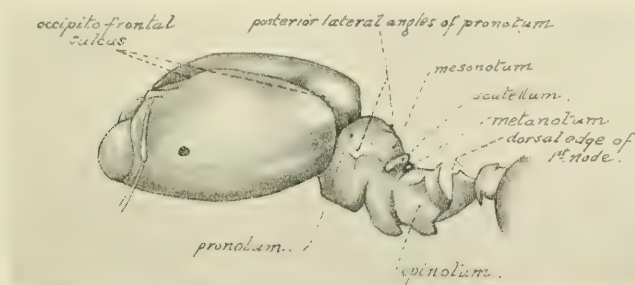


FIG. 20.—Head and thorax of *P. excellens*, race *rhodesiana*. ♀.

♀. Antennae 12-jointed. Head not wider, or very little wider than the thorax, not emarginate posteriorly, but rather convex or only feebly concave. Pronotum without tubercles or prominent angles, not exposed above. Mesonotum usually flat above in its posterior half. Dorsum of epinotum short and declivous; the spines or teeth generally broader and relatively much shorter than in the ♂ and ♂. Petiole very similar to that of the ♂. Abdomen elongate-ovate, not very convex above, with more or less pronounced basal angles. Wings fairly long, with two closed cubital cells.

♂. Antennae 13-jointed, the scape very short, rarely more than half as long as the long diameter of the eyes, flagellum filiform, the 1st joint globose. Head much wider in front than behind. Mandibles small, usually dentate. Eyes and ocelli large. Median area of clypeus convex. Frontal carinae very short, ill defined. Thorax similar to that of the ♀, but the mesonotum is more convex

and projects further forwards in front. Dorsum of epinotum generally very short, the teeth obsolete and indicated only by obtuse tubercles. First joint of petiole barely or not at all pedunculate, the node flattened, the posterior face usually dorsal in position. Second node more or less hemispherical, sometimes laterally dentate as in the ♂. Wings as in the ♀.

This genus occurs in both hemispheres and includes a very large number of species, many of which break up into numerous varieties and races. All the South African species with which I am acquainted are omnivorous, with a marked fondness for sugary substances, but some species, *e.g. excellens*, *crassinoda* and *Arnoldi*, are mainly graminivorous, harvesting the seeds of grass in the same way as the species of *Messor*. They do not appear, however, to limit themselves so exclusively to the seeds of one particular kind of grass as in that genus, nor are their stores of seeds so large. Nearly all the species which I have seen usually nest in the ground, and the nest entrances are generally clearly indicated by irregular craters of earth around them. A few species may sometimes be found nesting in hollow trunks of trees, but such a situation is uncommon. The duties of the large-headed soldiers appear to be mainly to remove to and from the nest any matter which is too bulky to be handled by the ♂♂, and with their powerful mandibles to dismember the bodies of their insect prey. For purposes of defence they appear to be of very little use, being far less courageous than the small worker. This is easily seen on digging up a nest, when it will be found that the workers attack the intruder, stinging and biting to the best of their ability, while the soldiers immediately seek shelter among the *débris*, or in the deeper parts of the nest. Nevertheless, if they are sufficiently irritated, they will also attack, and bite so firmly to the skin of the hand that they will allow themselves to be torn in half rather than loosen their hold.

The species of this genus are pre-eminent in their readiness to harbour other insects in their nests. In Rhodesia it is in the nests of *P. punctulata* that one may most frequently find such myrmecophiles, especially Paussidae, Clavigeridae and Pselaphidae. Amongst the ♂♂ and ♀♀ of the genus, there is a general uniformity of structure which renders the determination of the different species a difficult matter, so that it is essential that examples of the ♀ caste should be obtained, in which a greater specific diversity is apparent.

In the treatment of this genus I have endeavoured to arrange the species into groups, such grouping being based chiefly on the

structure of the ♀♀. Although I believe that the arrangement adopted is a fairly natural one for our South African species, yet it is not claimed that it definitely indicates a natural or close relationship amongst the components of each group.

(*N.B.*—In measurements of the length of the head the mandibles are excluded. Contrary to the method adopted in the case of *Strumigenys*, etc., it is more convenient in dealing with this genus to include the occipital lobes in the measurement; the latter is, therefore, taken from the level of the anterior margin of the clypeus to the level of the apices of the occipital lobes. The width of the 2nd nodes of the petiole is measured across its widest part, *i.e.* including the lateral teeth or spines. The length of the 1st segment of the petiole should be taken along the ventral surface of the segment.)

(A) PUNCTULATA Group.

♀. Head very convex above and at the sides, and (neglecting the mandibles and occipital emargination), more or less round in outline. Occipital sulcus rarely deep. The posterior half or less of the head smooth and shining. Second node of the petiole not sharply spinose at the sides.

- (2) 1. Mandibles strongly and fairly closely punctate-striate *Foreli*, Mayr.
- (1) 2. Mandibles finely and sparsely punctured.
- (8) 3. Posterior half of the head shining and without sculpture.
- (5) 4. Occipital emargination of the head shallow, its apex not angular; sides of the head behind the eyes moderately convex
punctulata, Mayr.
- (4) 5. Occipital emargination much deeper; the sides behind the eyes very convex.
- (7) 6. Occipital emargination angular at its apex; a distinct trace of the anterior ocellus is present in a pit-like depression *rotundata*, Forel.
- (6) 7. Occipital emargination arcuate at its apex; no trace of the anterior ocellus present *rotundata* var. *Ilgii*, Forel.
- (3) 8. Less than half of the head posteriorly shining and without sculpture.
- (10) 9. Only the posterior fourth of the head smooth and shining, occipital emargination wide and very shallow; second node angulated at the sides *victoris*, Forel.
- (9) 10. Posterior two-fifths of head smooth and shining; occipital emargination narrow and fairly deep; sides of second node convex.
- (12) 11. Length 4.5 mm.; mandibles shallowly punctured; dorsal edge of first node emarginate *tenuinodis*, Mayr.
- (11) 12. Length 5.3 mm.; mandibles deeply punctured; dorsal edge of first node entire *tenuinodis* var. *sipapomae*, Arnold.

(B) PRELLI Group.

♂. Head less convex than in Group A, the outline, seen from above, not round but more or less quadrate; the occipital sulcus deep and continuous with the frontal sulcus. Sides of the head behind and above the eyes sometimes fairly deeply and obliquely excavated (this feature is much more distinct than in any member of Group A). Frontal carinae prolonged back as far as the posterior third of the head, or further. A trace of a scrobe present, and sometimes also of the anterior ocellus. Second node angular at the sides, sometimes acutely so, but not spinose.

- (4) 1. Whole head sculptured and dull; occipital emargination not very deep.
- (3) 2. Apices of the occipital lobes fairly angular; head not parallel-sided; scapes short *Prelli*, race *redbankensis*, Forel.
- (2) 3. Apices of the occipital lobes rounded; head parallel-sided; the scapes long, extending to the posterior fifth of the head *Mauferi*, Arnold.
- (1) 4. Occipital lobes smooth and shining, their apices strongly rounded; occipital emargination deep *redbankensis* var. *politocciput*, Santschi.

(C) ALLOPHEIDOLE Group (subgenus *Allophaidole*, Forel).

♂. More or less like Group B in the shape of the head of the ♂, but having forms intergrading between the ♂ and ♀; some of these have the head wider in front than behind. Second node dentate or nearly spinose at the sides

cuitensis, Forel, race *reddersburgensis*, Forel.

(D) ARNOLDI Group.

Small species, especially in the ♀ caste.

♂. Head longer than wide, slightly wider in front than behind and nearly parallel-sided, or the sides only feebly convex; the occipital emargination fairly deep. Posterior two-thirds of the head smooth and shining. Second node of petiole sharply spinose at the sides, the spines curved a little backwards or sharply angular.

- (2) 1. ♂. Head a little more than a quarter longer than wide; ♀, head and thorax dull *Arnoldi*, Forel.
- (1) 2. ♂. Head at least two-fifths longer than wide; ♀, head and pronotum shining *strator*, Forel, race *fugax*, Arnold.

(E) CAPENSIS Group.

♂. Very similar to Group D, but the posterior emargination of the head is less deep and less angular. The head is longer than wide, not wider in front than behind, almost parallel-sided. Second node

sharply angular or obtusely spinose at the sides. An oblique depression above and behind the eyes is more or less noticeable.

1. Sides of second node merely angular; transverse torus on the mesonotum feeble; epinotal teeth small . . . *capensis*, Mayr.
2. Sides of second node obtusely spinose; transverse torus on the mesonotum strong; epinotum armed with fairly long spines
xocensis, Forel.

(F) SPINULOSA Group.

♂. Head longer than wide, the sides moderately convex or nearly straight, the occipital emargination wide, not deep, arcuate at its apex. Posterior half of the head shining. Second node acutely dentate or spinose at the sides.

1. Head as wide in front as behind, its sides straight and subparallel
Schultzei var. *gwaaensis*, Forel.
2. Head narrower in front than behind, its sides convex
spinulosa Forel.

(G) SCULPTURATA Group.

Usually rather large forms in ♂ and ♀ castes.

♂. Head longer than wide, the sides fairly straight. Occipital emargination deep, its apex angular. Second node of petiole strongly spinose at the sides.

- ♀. Second node more or less distinctly angular at the sides.
- (6) 1. The whole of the head dull and sculptured, at the most only the apices of the occipital lobes smooth and shining.
 - (3) 2. Posterior third or half of the head with obliquely transverse rugae extending outwards from the occipital sulcus; epinotum usually armed with long spines in the ♀
Liengmei, Forel, and races and varieties.
 - (2) 3. Posterior third or half of the head not transversely rugose; epinotum armed with short teeth in the ♀.
 - (5) 4. Small species, ♂ less than 5 mm. long, the head less than 2 mm. long
Akermani, Arnold.
 - (4) 5. Larger species, ♂ more than 5 mm. long, the head at least 2·7 mm. long
sculpturata, Mayr, and races and varieties.
 - (1) 6. Posterior third or half of the head smooth and shining
excellens, Mayr, race *rhodesiana*, Forel.

(H) CRASSINODA Group.

♂♂ and ♀♀ large.

♂. Head distinctly convex at the sides and above (somewhat resembling the ♂ of the *punctulata* group), much wider behind than

in front, and, excluding the mandibles, about as long as wide. Posterior half of the head smooth and very shining. Occipital emargination wide but not deep. Second node of petiole angular at the sides, its anterior margin nearly semicircular or very convex

crassinoda, Emery, and races.

P. PUNCTULATA, Mayr. (Plate VI, fig. 67.)

Verh. Zool. Bot. Ges. Wien, vol. 16, p. 899, 2, 1866.

2. 4.2-4.5 mm. Head and thorax varying from dark reddish-brown to light brownish-red, the head always darker than the thorax, especially near the anterior corners and along the middle of the vertex; abdomen yellowish-brown, legs and antennae dirty ochreous, masticatory margin of the mandibles dark brown. Antennae with a fine and pale pubescence, absent elsewhere. Pilosity sparse, composed of long, yellowish and semi-erect hairs, oblique on the tarsi. Mandibles and posterior half of the head very shining, the latter sometimes less so owing to a fine alutaceous sculpture. Anterior half of the head faintly shining, with widely spaced longitudinal striae, the spaces between the striae finely reticulate, punctate or aciculate. Mandibles strongly and sparsely punctured. Clypeus with a few longitudinal striae in front, the middle one strongest, forming almost a carina.

Pronotum and mesonotum very finely rugulose or alutaceous, the former slightly shining and with faint transverse striae. Epinotum, sides of mesonotum and upper faces of the nodes finely and regularly reticulate-punctate, the dorsum of the epinotum slightly shining, the nodes dull. Abdomen microscopically reticulate, feebly shining. Legs smooth and shining.

Head not deeply emarginate behind, very convex above in all directions, widest at about the posterior third, as wide as long, narrower in front than behind, the sides and occipital lobes very convex. Seen from the side, the head is higher in front of the eyes than behind them, *i. e.* the front part is much thicker than the part behind the eyes. The sides behind the eyes are slightly hollowed out, but the wide depression so formed is not easily visible except at a certain angle. Clypeus arcuately emarginate in the middle. Eyes placed in front of the middle of the sides. Mandibles broad, convex, the masticatory margin concave and armed with two strong obtuse teeth at the apex. Frontal carinae short, hardly extending beyond the level of the posterior margin of the eyes, widely divergent behind. Scape extending back as far as the middle of the head, the flagellum not much longer than the scape. Pronotum considerably narrowed in front to form a neck, and

behind produced on each side into a prominent angle, which is slightly obtuse at the apex; it is widest between the angles and one-third wider than long. Pro-mesonotal suture feeble. Seen in profile, the pro-mesonotum is very convex, almost angular or rising from in front to the pro-mesonotal suture, thence curving abruptly down to the base of the mesonotum. The latter is subcircular, a little less than half as wide as the pronotum between the posterior angles, and a little wider than long. The metanotal region is not clearly defined. Dorsum of epinotum horizontal, a little longer than wide; the declivity a little longer than the dorsum, and oblique. Epinotal teeth small, not longer than their basal width, directed backwards, upwards and slightly outwards. First joint of the petiole about twice as long as wide, seen from above triangular, the anterior face quite twice as long as the posterior-dorsal, the dorsal edge (*dorsal edge*, see Text-fig. 20), indented in the middle. Second node one-third wider than long, narrowed behind, transversely lozenge-shaped, the sides produced into subacute angles, the anterior face convex. Abdomen nearly circular, the base truncate. All the femora swollen.

♀. 2.7–3 mm. Head varying from light yellowish-brown to dark brown with a slightly reddish tinge. Thorax and petiole varying from ochreous to light yellowish-brown, abdomen light brown to dark brown, the base of the 1st segment always somewhat paler; legs pale fuscous yellow, the tarsi lighter, the antennae brownish-yellow. Head smooth and shining, with a few very shallow punctures. Pro- and mesonotum shining, but less than the head, the mesonotum faintly rugulose above, reticulate and dull at the sides. Epinotum dull and reticulate. Petiole, abdomen and legs almost smooth, slightly shining.

Head subcircular, a little longer than wide. Eyes convex, placed in the middle of the sides. Clypeus narrow at the sides, the median area with a median longitudinal raised line (hardly a carina), the anterior margin convex. Mandibles triangular, the masticatory margin as long as the basal, finely denticulate, the two apical teeth acute. Frontal carinae extending back to the level of the anterior margin of the eyes, rather wide apart and divergent behind. Frontal area triangular, depressed. Scape of the antennae long, incrassate towards the apex, extending beyond the occipital margin by about one-fifth of its length; flagellum long, the 1st joint two and a-quarter times longer than wide, all the other joints also longer than wide, the 3-jointed club a little longer than the rest of the flagellum.

Pro-mesonotum less convex than in the ♀, the dorsal profile forming a longer and lower convexity, the curve of the mesonotum especially

being much less abrupt. It is also much narrower than in the ♀, half as long again as wide, the posterior lateral angles represented only by slight tubercles. Pro-mesonotal suture very indistinct above, the meso-epinotal very deep and wide. Dorsum of the epinotum feebly convex transversely and longitudinally, longer than wide, the epinotal teeth similar to those of the ♀, but smaller. The 1st node of the petiole like that of the ♀, but the dorsal edge rounded, the anterior face oblique. The second node is a little longer than wide, the sides convex; seen from above, it is subconical over its anterior two-thirds. Abdomen oblong-oval, the 1st segment as long as wide and longer than the remaining segments taken together.

♀. 7 mm. Dark reddish-brown or castaneous, the head usually paler or more reddish. Legs and antennae yellowish-red. Mandibles, clypeus and pro-mesonotum shining, head, epinotum and petiole rather dull, abdomen shining but less so than the thorax. Pubescence short, very sparse and inconspicuous; pilosity sparse, not long, yellowish, on the apical segments of the abdomen somewhat longer. Head longitudinally striate, the cheeks and temples (*i.e.* the region between the eyes and the frontal carinae) with some transverse striae which anastomose with the longitudinal ones, the spaces between the striae very finely rugulose. Mandibles triangular, stout, sparsely and coarsely punctured, the masticatory margin blackish, with two apical teeth and one or two obtuse teeth at its base, the space between denticulate. Pro-mesonotum smooth and shining, very sparsely and shallowly punctured, the mesonotum also very finely striate longitudinally, the striae converging posteriorly. Scutellum smooth and shining above, reticulate-striate at the sides, separated from the mesonotum by a deep and clathrate groove. Epinotum, nodes of petiole above and the abdomen more or less reticulate, the abdomen exceedingly finely so. Legs shining and sparsely punctured.

Head widest behind, one fifth wider than long, the sides convex, the posterior margin straight. Eyes very convex, placed a little in front of the middle of the sides. Anterior margin of the clypeus shallowly emarginate in the middle. Frontal area distinct, subtriangular. Frontal carinae slightly divergent behind. The scape extends back as far as the posterior margin of the head. Pronotum not exposed above except the narrow neck portion. Mesonotum a little more than one-quarter wider than long, convex in front, flattened behind, its anterior margin, seen from above, semicircular. Metanotum very short. Epinotum transversely concave between the teeth, sometimes rather deeply so; the dorsum very steep, short, narrowed posteriorly, the declivity subvertical. Epinotal teeth short, acute, not longer than

their basal width. Petiole as in the ♀. Abdomen oblong-ovate, truncate at the base, the lateral angles rounded but distinct, above somewhat flattened, the apex broad. The apical margins of the abdominal segments pale. Wings and nervures yellowish, the stigma brownish-yellow.

♂. 5.5–6 mm. Yellowish-brown, the mandibles and antennae pale ochreous, the space between the mesonotum and scutellum, the epinotum, petiole, pronotum and sides of the meso-metathorax usually much paler or ochreous. Legs yellowish-brown, the articulations and all the tarsi yellow. Head and thorax dull, scutellum, abdomen and nodes above slightly shining. Head strongly and longitudinally striate, the striae curving round behind the anterior ocellus; the sides behind the eyes obliquely striate. Sculpture of the thorax and abdomen similar to that of the ♀ but stronger, especially on the disc of the metanotum and on the epinotum, the latter having some more or less longitudinal striae.

Head subtriangular, much wider in front than behind. Eyes very large, occupying more than the anterior half of the head. Ocelli large, raised, the posterior ocelli more than twice as far apart from each other as they are from the anterior ocellus. Mandibles short, small, the masticatory margin with three acute teeth in front and two smaller teeth behind. Clypeus convex, the anterior margin rounded. Frontal carinae very short. Antennae filiform, finely pubescent, not extending back beyond the base of the mesonotum; the scape very short, not reaching the middle of the eyes when extended laterally and hardly longer than one ocellus. First joint of flagellum subglobose, very little longer than wide, the remaining joints all longer than wide. Mesonotum as wide as the head, as wide as long, the forks of the Mayrian furrow fairly well defined in front, the median furrow obsolete. Scutellum slightly raised posteriorly, not sloping downwards as in the ♀, narrower behind than in the ♀, its sides vertical. Dorsum of the epinotum quite twice as wide at its base as at its apex, about as long as the scutellum and one-third longer than the declivity. Dorsum of epinotum unarmed, the teeth of the ♀ being replaced by two subcarinate ridges. The petiole resembles that of the ♀, but the node of the first joint is thicker above and less raised. Abdomen elongate-ovate, narrowed apically, rounded at the base; the first segment a little wider than long and as long as the remaining segments taken together. Legs long and thin. Wings hyaline, nervures and stigma pale yellow.

Cape Province, common. (S.A.M., R.M., G.A. colls.)

This form was originally described by Mayr as a race of *P.*

megacephala, but by general consent it is now accorded specific rank. It is nevertheless closely allied to that species, which is a tropicopolitan form having a very wide distribution. Like it, *punctulata* i. sp. or its geographical varieties is widely distributed throughout South and Central Africa, and in Rhodesia and Natal is one of the commonest and most abundant of ants. Like *megacephala* it is very partial to sugar and other provisions and is therefore a frequent pest in houses. It nests in the ground, and often under the shelter of stones and decayed logs, also occasionally in hollow trunks of trees. Usually many fertile queens are found in each nest. In the nest of var. *atrox*, Forel, I have found on different occasions the following species of Paussidae: *Curtisi*, *cultratus*, *cucullatus* and *Klugi*, also a *Cossyphodes* and a Pselaphid as yet undescribed.

As might be expected in a species with such a wide distribution, *punctulata* is very variable in some minor details of its structure, such as the sculpture, the size and shape of the epinotal teeth, etc., but for each particular character intermediate forms can be found connecting one extreme with the other, even in a series collected over a very small area. For these reasons, the erection of new varieties and races should be undertaken only with the greatest circumspection, and it is probable that with a more thorough knowledge of the range of variation, many of the existing varieties and races will have to be revised or deleted. In addition, the relationship of this species to *P. rotundata*, *tenuinodis* and *victoris* appears to me to be a very close one.

Var. ATROX, Forel.

(As race) Rev. Zool. Afric., vol. 2, p. 328, ♂, ♀, 1913.

♂. 4 mm. Head and pro-mesonotum dark brown, the front of the head a little lighter and redder. Nodes and abdomen brown, the latter paler over the first segment. Head a little longer relative to its width than in the type-species and more shallowly emarginate behind. The scape is a trifle longer and the abdomen is more elongate. The second node is also narrower, being hardly wider than long. Otherwise like the type-species.

♀. 2.2 mm. Piceous, the posterior half of the thorax paler, legs, antennae and mandibles more or less yellowish-brown or brownish-yellow. Head slightly narrower than in the type-species, and the second node narrower. Otherwise similar.

♀. 6.5-7 mm. Body much darker than in the type-species, almost entirely brownish-black. The epinotal teeth are slightly larger and longer, and the dorsal edge of the first node is more deeply emarginate.

♂. 5.7 mm. Head reticulate-punctate on the vertex and between the ocelli. Mayrian furrows more clearly defined, the dorsum of the epinotum much shorter and more oblique than in the type-species; the epinotum is also excavated between the lateral tubercles, which are broader and less prominent. The nodes of the petiole are a little wider. Otherwise like the type of the species.

S. Rhodesia, common; often a nuisance in houses, infesting pantries and provision cupboards. (S.A.M., R.M., G.A. colls.)

PHEIDOLE INQUILINA, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 240, 1914.

This form was described doubtfully by Forel as a distinct species, possibly of inquiline habits. I have recently dissected the abdomen of a specimen and found that it contained a parasitic worm, coiled up and occupying the greater part of the abdominal cavity. This proves that these peculiarly shaped forms are only ♂♂ or ♀♀ whose structure has been modified by the presence of the parasite in the abdomen, and are therefore to be included in the category of "*mermithergates*." The appearance of the gaster with its contained parasite is precisely like that of *Pheidole commutata*, mermithergate, figured by Wheeler in his 'Ants,' p. 421.

I have found these abnormal forms at Hillside, Bulawayo, in two nests of *P. punctulata* var. *atrox*. The abdomen in these specimens is enormously swollen, having a much greater volume than the head and thorax taken together. The head is much narrower and smaller than in the ♀, having mainly the structure of the ♂ head, but dull and coarsely sculptured. The thorax resembles that of the ♀, the petiole that of the ♂. A little longer than the ♀, 4.5 mm.

P. ROTUNDATA, Forel.

Mitth. Schweiz. Ent. Ges., vol. 9, p. 92, ♂, ♀, 1894.

♀. 5.8-6.2 mm. Head 2.3 mm. long × 2 mm. wide. Colour, pilosity and pubescence as in *punctulata*, but the mandibular teeth, sides of epinotum, petiole and abdomen a little darker. The abdomen almost piceous, with the base of the first and apical margins of all the segments paler.

Sculpture stronger than in *punctulata*, and the striae between the frontal carinae more numerous. The shape of the head is similar to that of *punctulata*, but higher and more dome-shaped, and sloping

more steeply downwards in its posterior half. The occipital emargination narrower and deeper, the occipito-frontal sulcus also deeper. In the middle of the vertex, or just in front of the middle, there is a pit containing the median ocellus, very small but entire; behind this there are a couple of very shallow depressions, only visible at a certain angle, which are the vestiges of the posterior ocelli. The clypeus has a faint median carina (hardly more than a raised line in *punctulata*), the pronotum is wider, relative to its length, than in *punctulata*, and the posterior lateral angles less rounded at the apex, the mesonotum more clearly defined in front. The posterior half of the second joint of the petiole has a few oblique striae above. Otherwise like *punctulata*.

♀. 3.2 mm. Like *punctulata* but darker and a little larger. The sides of the head in front of the eyes are more strongly striated, and the frontal area is larger and more angular behind. The pronotum has a transverse and dark raised line in front, just above the neck;



FIG 21.—*P. rotundata*, Forel.

this is hardly indicated in *punctulata*. The epinotum and sides of the mesonotum are more strongly reticulate. Otherwise like *punctulata*.

♂. 5.3 mm. Eyes a little larger and much more convex than in *punctulata*. The dorsum and declivity of the epinotum form a continuous and oblique curve; the lateral tubercles or ridges entirely absent. Otherwise not distinguishable from *punctulata*.

Chirinda Forest, S.R. (Swynnerton); Livingstone, N.R.; Durban. (S.A.M., R.M., G.A. colls.)

Race IMPRESSIFRONS, Wasmann.

(Race of *megacephala*.) Notes Leyden Mus., vol. 25, p. 72, 110,
♂, ♀, 1904.

Forel, Deutsch. Ent. Zeitschr. Beiheft., p. 213, 1913.

“♂. 4.5–5 mm. Differs from *punctulata* in its greater size and more cordate (narrowed in front) head, which is wider and more deeply emarginate, and has a more or less distinct transverse (?)

impression on the vertex. The sculpture is like that of *punctulata*, but the head is more shining, mostly more sparsely and more finely punctured, but occasionally more coarsely and more closely, in which case the occipito-frontal sulcus is finely and longitudinally striate.

“♂, like that of *punctulata*, somewhat larger, 2·5 mm.

“♀, like that of *punctulata*, somewhat larger, 6·5 mm.

“The colour of the ♀♀ varies from reddish-yellow to brown. The darkest ♀♀ are from Port Elizabeth (host of *Paussus Elizabethae*, Per.), leg. Dr. Brauns; these also have the coarser puncturation of the head. The remaining examples come from Natal (4000 ft., leg. G. D. Haviland), and Port Elizabeth (leg. Dr. Brauns), and are of a brighter yellowish-brown or reddish-yellow, and the puncturation of the head is finer.”

Dr. Forel places this race with *rotundata*. In the paper cited specimens of *P. Foreli* taken at Knysna have been erroneously referred by him to *impressifrons*.

IMPRESSIFRONS, var. LGII, Forel.

Voeltzkow's Reise, vol. 2, p. 82, ♂, ♀, 1907.

Rev. d'Ent., p. 138, ♀, ♂, 1908.

Deutsch. Ent. Zeitschr. Beiheft., p. 213, 1913.

♀. 5 mm. Head 1·9 mm. wide × 2 mm. long. This variety differs from the type of the species in the following characters:

The head is not so much wider behind than in front, being widest at about the middle (at the posterior fourth in the type of *rotundata*), the posterior angles more prominent, less rounded, the occipital emargination wider and shallower. The sides of the head above the eyes flatter, or slightly convex. The striae between the frontal carinae less close and finer, the sides of the head in front less strongly sculptured. The anterior margin of the clypeus is more deeply emarginate, the median area not carinate. The base of the abdomen is more sharply truncate. Smaller than the type-species.

♂. 3-3·2 mm. Paler than the type, head reddish-brown, thorax brownish-yellow, petiole and abdomen fuscous brown, the abdomen somewhat yellowish at the base. Articulations of the legs, the antennae and mandibles brownish-yellow, the tarsi entirely yellow, femora and tibiae fuscous yellow. Meso-epinotal suture shallower than in the type-species, epinotal spines shorter and a little closer together. Second node less conical, more barrel-shaped, widest a little behind the middle (widest at its posterior third in the type-species). Otherwise like *rotundata*.

“ ♀. Head wider than long, wider than in the type of *rotundata*, more excavated behind, with a more distinct and smooth space for the scapes. The tibiæ have only oblique hairs. Wings very large, at least 10 mm. long (8 mm. in the type, in which the body is also large, 7.5 mm.). Of a very dark-brown colour, with the basal half of the flagellum, the mandibles, tarsi and articulations reddish. Otherwise like the type-species.

“ ♂. The eyes are smaller and the head is narrower behind than in the type. The scape is more slender and longer, twice as long as the 1st joint of the flagellum. Body 5.5 mm. long, the length of the front wing 7.2 mm. In the type-species the body is 4.8-5 mm. long, and the front wing 6 mm. Head brownish, thorax yellowish-brown, the rest of a dull, pale yellow. In *rotundata* the thorax and head are somewhat reddish-yellow.”

Bulawayo. (R.M., G.A. colls.)

P. TENUINODIS, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 12, ♀, ♂, 1901.

♀. 4.5 mm. Head and thorax dark yellowish-red, the anterior margin of the clypeus, the epinotal spines and sides of epinotum below dark brown, abdomen brown but paler at the base, mandibles castaneous red, legs and antennae reddish-yellow, or the whole body dark reddish-brown with the legs and antennae a little paler. Body with a fairly abundant, long and semi-erect pilosity, much more plentiful and longer than in *punctulata*. Anterior three-fifths of the head strongly and longitudinally striate, the spaces between the striae reticulate and fairly dull; below the eyes the striae are stronger. Posterior two-fifths of the head, and the cheeks, from the posterior angles as far as the eyes, smooth and shining, with a few piligerous punctures. Mandibles shining, sparsely and fairly coarsely punctured. Median area of the clypeus with a few oblique striae at the sides, and a strong longitudinal carina in the middle. Dorsum of pro-mesonotum moderately shining and fairly smooth, but with a few fine and superficial rugosities near the posterior lateral angles and on the mesonotum. Epinotum and sides of thorax reticulate-punctate and dull. Petiole very minutely reticulate and almost dull. Abdomen smooth and shining, microscopically rugulose at the extreme base.

Head much flatter than in *punctulata*; excluding the mandibles a trifle longer than wide, widest in the middle, hardly wider behind

than in front, the sides not very convex. The transverse contour of the head, at the level of the eyes, forms a moderately convex and regular curve. Occipital emargination fairly deep, deeper but narrower than in *punctulata*. Occipito-frontal sulcus narrow and deep. Anterior margin of clypeus emarginate in the middle. The frontal carinae extend back as far as the level of the eyes, and are slightly prominent. Frontal area depressed, the margins bounded by a raised line. Scape of antenna extends back as far as the posterior third of the head, all the joints of the flagellum longer than wide. Eyes placed a little in front of the middle of the head. Posterior lateral angles of the pronotum very obtuse, much less prominent than in *punctulata*; the profile of the pro-mesonotum is also much less convex than in that species. The mesonotum has a shallow transverse impression in front of the slightly tumid scutellar region. Meso-epinotal suture not very deep. Dorsum of epinotum narrow, longer than wide, margined at the sides and concave transversely. Epinotal teeth directed upwards and slightly backwards, not as long as the width of the dorsum; declivity subvertical, a little shorter than the dorsum. First node with the posterior face horizontal, the anterior vertical, the dorsal edge slightly emarginate. Second joint subglobose, feebly angular at the sides, narrowed behind, three-fourths wider than the first and about as long as wide.

♂. 2·8–3 mm. Colour similar to that of *punctulata*, but the head and thorax darker and more reddish-brown, or the body entirely dark brown. Mandibles dark yellow, legs brownish-yellow.

Pilosity longer and more abundant than in *punctulata*. Head smooth and shining, the cheeks and temples sparsely striate longitudinally, the spaces between the striae reticulate. Thorax more strongly reticulate than in *punctulata*, the sculpture extending over the posterior half of the mesonotum. Mandibles very finely longitudinally striate. Anterior margin of clypeus shallowly emarginate in the middle, the median area with a raised line in the middle which does not quite reach the posterior margin of the clypeus. Scape of antenna longer than in *punctulata*, extending by one-fourth of its length beyond the posterior margin of the head (one-fifth in *punctulata*); 1st joint of flagellum as long as the 2nd and 3rd taken together. Frontal carinae slightly convergent behind, not widely divergent as in *punctulata*. Thorax narrower than in that species, the dorsum of the epinotum long. Mesonotum with a faint transverse median impression. Dorsum of epinotum margined at the sides as in the ♀, but less sharply. First joint of the petiole with the peduncle quite as long as the node, if not longer; the node is thinner above and higher than in

punctulata. Second node narrow, barrel-shaped, widest a little behind the middle, one-fourth longer than wide, three-fourths wider than the 1st.

♀. 8.3 mm. (hitherto undescribed). Very similar to *punctulata* but larger and darker. The head is a little wider, duller and more closely striate, the spaces between the striae closely reticulate and crossed by transverse ridges. The epinotum is longer and transversely concave almost from its base downwards, the dorsum very short and steep, margined at the sides. Epinotal teeth slightly incurved, larger than in *punctulata*. The chief distinction between this species and *punctulata* lies in the shape of the 2nd joint of the petiole, which when seen from above is biconvex, a little wider in front than behind, and not at all angularly produced at the sides. Otherwise like *punctulata*.

S. Rhodesia, fairly common; Ladismith, Cape Prov. and Bothaville, O.F.S. (Brauns). (S.A.M., R.M., G.A. colls., type of ♀ in my collection.)

PHEIDOLE TENUINODIS, Mayr, var. SIPAPOMAE, n. v.

♂. 5.3 mm. Larger than the type of the species. Sculpture of the head similar but stronger, the mandibles also much more deeply punctured. The hind margin of the head less widely but more deeply emarginate. Promesonotal suture more clearly defined. Dorsum of the epinotum wider and relatively shorter, hardly one-third longer than wide at the base of the spines. Dorsal edge of the 1st node not emarginate, the sides of the 2nd node much less angular. Legs reddish-ochreous, abdomen piceous, the apical margins of the segments testaceous. Otherwise like the type of the species.

♀. 3.6 mm. Colour a little darker, and the head more strongly sculptured than in the type of the species. Posterior fourth of the head finely reticulate. Clypeus sharply carinate. Meso-epinotal suture much deeper and wider. Otherwise like the type of the species.

Sipapoma, Ungusa River and Victoria Falls, S. Rhodesia.

The ♂♂ from Victoria Falls are a little larger than the others (5.6 mm.) and a good deal darker, but otherwise identical. The nest has several entrances, surmounted by irregular and rather high craters. (S.A.M., R.M., G.A. colls.; types in my collection.)

P. VICTORIS, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 127, ♂, ♀, 1913.

♂. 4.2-4.5 mm. Reddish-brown. Abdomen pale brown or yellowish-brown with the apical margins of the segments much paler.

Very similar in colour to *tenuinodis*. Pilosity and pubescence as in that species, but the legs with a denser pilosity. Head dull, except the posterior fourth, which is slightly shining. Thorax and abdomen dull, the pronotum nitidulous in front. Head longitudinally striate between and behind the frontal carinae, longitudinally reticulate, rugose at the sides, the spaces between the striae dull and finely reticulate. The striae extend further backwards than in *tenuinodis*. The posterior fourth of the head microscopically rugulose, with a few large and shallow punctures. Mandibles smooth and shining, finely and sparsely punctured. Pronotum with a few feeble transverse rugae, the rest of the thorax and the petiole reticulate, almost transversely striate on the declivity of the epinotum. Abdomen alutaceous.

Head resembling that of *tenuinodis*, but more convex and higher, widest behind the middle, narrower in front than behind, the occipital lobes much more rounded and obtuse, the occipital emargination much shallower and arcuate, not angular at the apex. Occipito-frontal sulcus also shallower than in *tenuinodis*. Clypeus sharply carinate in the middle. Posterior lateral angles of the pronotum very obtuse, small, and not projecting laterally. Pro-mesonotal suture more clearly defined than in *tenuinodis*. Mesonotum with a transverse impression in front of the scutellar portion, the latter fairly well defined. Dorsum of epinotum almost horizontal, as long as wide between the teeth. The latter are slightly divergent, and their front edge is continued as a raised line forwards, margining the dorsum. The declivity is very oblique and as long as the dorsum. First joint of the petiole like that of *tenuinodis*, but the dorsal edge is not emarginate. Second joint almost twice as wide as the first, nearly one-fourth wider than long, widest in the middle, the sides obtusely angulated in the middle, not convex as in *tenuinodis*.

♀. 2.3–3 mm. Reddish-yellow, the head darker behind, abdomen brown, paler at the base. Legs and antennae dark ochreous. The clypeus, middle of the head longitudinally, the disc of the mesonotum and the abdomen smooth and shining, the rest of the body dull or only nitidulous. Pubescence and pilosity as in *punctulata* ♀. Sides of the head finely reticulate-punctate and with a few longitudinal striae, which do not extend far behind the eyes. Thorax reticulate-punctate, more strongly so than in *punctulata*. Petiole slightly shining. Head oval, widest in the middle, the anterior half as wide as the posterior (in *punctulata* and *tenuinodis* wider behind than in front), the sides convex. Eyes very convex, placed at about the middle of the sides. Frontal carinae short, parallel; frontal area

large, distinct, its posterior margin round. Scape of antennae longer than in *punctulata*, extending back as far as the posterior third of the mesonotum. Pro-mesonotum less convex than in *punctulata*. Transverse impression and scutellum of the mesonotum fairly distinct. Dorsum of epinotum one and a-half times longer than wide, distinctly margined at the sides; epinotal teeth rather small, not longer than half the interval between them; declivity oblique, shorter than the dorsum. The peduncle of the 1st joint of the petiole nearly twice as long as the node, which is like that of *punctulata*; 2nd joint subpyriform, one-quarter longer than wide, widest at about its posterior third, distinctly narrower, less conical and less thick from above to below than in either *tenuinodis* or *punctulata*. Legs longer than in those two species.

Malindi, S. Rhodesia. (G.A. coll.)

P. FORELI, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 8, ♀, 1901.

♀. 4.5–5.1 mm. Piceous, the legs and flagellum dark brown, tarsi yellowish-brown, mandibles dark reddish-brown. Pilosity longer, thinner and more abundant than in *punctulata*, especially on the head and legs.

Anterior half of the head, or a little more, dull and longitudinally rugose, the spaces between the rugae reticulate-coriaceous (the sculpture stronger than in *punctulata*). Posterior half of the head smooth and shining, very sparsely and fairly finely punctured. Pronotum smooth and shining, the rest of the thorax feebly and irregularly rugulose, mostly transversely rugulose, also partly reticulate-punctate, moderately shining. Nodes of petiole smooth above, very finely reticulate-punctate or granulate and dull at the sides and behind. Abdomen and legs smooth and shining.

Head, excluding the mandibles, as wide as long, not much narrower in front than behind, fairly deeply emarginate behind (more so than in *punctulata* or *tenuinodis*), the occipital lobes more prominent. Eyes placed well in front of the middle of the sides. Frontal carinae feebly divergent, not extending back beyond the level of the eyes. Median area of the clypeus shining, with a feeble median carina, slightly striato-rugose at the sides, shallowly emarginate in front. Frontal area well defined. Mandibles longitudinally striate, very strongly punctured between the striae, shining. Scapes extending back slightly beyond the middle of the head. Occipito-frontal sulcus shallow in the middle, deeper at its ends. Pronotum convex transversely and

lengthwise, excluding the neck about one-third wider than long, the posterior lateral angles very rounded, almost obsolete; mesonotum subcircular, a little wider than long, less than half as long as the pronotum; the scutellum distinct, the metanotum fairly clearly defined. Dorsum of epinotum a little longer than wide, as long as the declivity, moderately convex at its base, shallowly excavated at its apical half. Epinotal spines short, slightly divergent, subvertical, shorter than the interval between their bases. Pro-mesonotal suture distinct, the mesoepinotal deep, the thorax more strongly contracted at the latter point than in *punctulata*. First joint of the petiole with the anterior face as long as the ventral, the posterior-dorsal face short; 2nd node nearly twice as wide as the 1st, seen from above subquadrate, its anterior margin convex, the sides subparallel or converging a little posteriorly, without distinct angles.

♀. 2.8–3 mm. Dark brown to piceous, mandibles and flagellum brownish-red, articulations of the legs and the tarsi yellow. Shining. Cheeks very sparsely and irregularly striate, the temples finely reticulate. Mesothorax and epinotum reticulate-rugulose and a little dull, the rest of the body smooth. Pilosity scanty.

Head a little longer than wide, the sides moderately convex but less than in *punctulata*, the posterior margin narrowly emarginate. Eyes placed in front of the middle of the sides. Frontal carinae subparallel, not extending back beyond the level of the anterior end of the eyes. Mandibles feebly striate, sparsely punctured, the masticatory margin denticulate and with two larger teeth at the apex. The mandibles are rather long, quite half as long as the head. Median area of clypeus convex, the anterior margin entire and feebly convex. Scapes extending back beyond the occipital margin. Pro-mesonotal suture obsolete. Pronotum wider than long, convex in front and at the sides. Mesonotum wider than long, the scutellar region fairly clearly defined. Dorsum of epinotum convex lengthwise, horizontal and longer than wide; epinotal teeth very small, vertical, barely half as long as the interval between their bases. First segment of petiole as in *punctulata*, but longer, and the dorsal edge more rounded. Second node very little wider than the first, about as long as wide, the sides and upper surface convex.

♀. 7.8 mm. (hitherto undescribed). Dark brown. Head yellowish-red, legs brownish-red. Pilosity much longer and more abundant than in *punctulata* ♀; antennae, mandibles and tarsi densely pilose, the hairs very oblique. Head as far back as the posterior ocelli and including the whole clypeus dull, closely and coarsely reticulate-striate; behind the ocelli coarsely punctured and fairly shining. Mandibles

strongly and closely punctured. Epinotum irregularly and shallowly rugose. Anterior half of 2nd node longitudinally striolate. Base of abdomen smooth and shining, not alutaceous and subopaque as in *punctulata* ♀. Otherwise the sculpture is as in that species. Head wide, nearly as wide as the thorax across the tegulae. Clypeus with an obtusely angular emargination in front, and a fairly strong median carina. Head one-fifth wider than long, very little narrowed in front. Mesonotum one-third wider than long, the scutellum half as long as the mesonotum. Dorsum of epinotum much wider than long, epinotal teeth more acute than in *punctulata* ♀, one-third as long as the interval between their bases, directed obliquely upwards; the declivity vertical. Upper face of 1st node depressed behind its anterior margin, the anterior face of the 2nd node much less convex than in *punctulata*, the anterior angles less acute and less produced. Wings yellowish, nervures brownish-yellow. Otherwise like *punctulata* ♀.

Estcourt, Natal (R. C. Wroughton); Bothaville and Reddersburg, O.F.S. Port Elizabeth and Knysna, Cape Prov. (Dr. H. Brauns). (S.A.M., R.M., G.A. colls.; type of ♀ in my collection).

Var. PUBENS, Forel.

Schultze, Reise Süd. Afrika, vol. 4, p. 12, ♀, ♂, 1910.

Differs from the type by its paler colour, dark castaneous in the ♀, yellowish-brown in the ♂, also by the longer pilosity and longer epinotal spines.

Natal (Haviland and Wroughton). (G.A. coll.)

P. PRELLI, Forel, race REDBANKENSIS, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 47, p. 362, ♀, ♂, ♀, ♂, 1911.

(Race) Ann. Soc. Ent. Belg., vol. 57, p. 128, ♀, ♂, 1913.

♀. 4.8-5.2 mm. Bright castaneous red (burnt sienna), the anterior margin of the clypeus and the masticatory margin of the mandibles piceous; basal fourth and fifth of the abdomen yellowish-red, the rest piceous; legs reddish-yellow, the antennae dark brownish-red. Pilosity yellowish, sparse and oblique, almost absent on the thorax; legs and antennae very sparsely pubescent. Head longitudinally striate, the striae fairly parallel and widely spaced. The striae on the middle of the vertex are strongest and curve outwards over the occipital lobes. The fundamental sculpture between the striae is a fine reticulation which is fairly sharp at the sides of the head and feeble between the frontal carinae. The area between the latter fairly shining, the sides of the head duller. Thorax subopaque, finely reticulate, with a few fine

rugae superimposed; epinotum finely and transversely striate. Nodes dull, very closely reticulate, with a few thin transverse rugae on the 2nd node. Abdomen subopaque and alutaceous at the base, the rest smooth and shining. Head, excluding the mandibles, as long as wide, widest at the posterior third, narrower between the posterior angles than across the anterior margin, the sides convex, the occipital lobes prominent, the occipital emargination deep and angular at the apex. Occipito-frontal sulcus deep behind. Head highest in the middle, as high in front as behind. Sides of the head, between the eyes and the posterior ends of the frontal carinae, shallowly concave lengthwise. The frontal carinae extend back as far as the posterior fourth of the head, moderately divergent in their anterior half, subparallel in their posterior half, prominent and forming a slight demiscope. Eyes placed in front of the middle of the sides, convex and not small. Clypeus carinate in the middle, the anterior margin with a wide and shallow

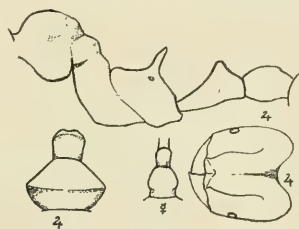


FIG. 22.—*P. Prelli*, Forel, race *redbankensis*, Forel.

emargination, the median area smooth and shining, except at the sides, which are faintly striate. Mandibles shining, strongly but sparsely punctured, armed with two large apical teeth. Antennae slender, the scapes strongly curved near the base, extending back to the posterior third of the head. Pronotum, including the neck, a little wider than long, much wider behind than in front, convex in front, the lower posterior angles very obtuse, the upper ones almost obsolete, barely tubercular. Pro-mesonotal suture indistinct. Mesonotum transversely impressed in front of the scutellar portion, the latter is vertical in the posterior half; the metanotum indistinctly defined, oblique in profile. Meso-epinotal suture wide and shining. Dorsum of epinotum longer than wide, with a deep longitudinal groove from base to apex; epinotal spines subvertical, barely divergent, fairly acute, longer than their basal width and as long as the interval between their bases; declivity subvertical, as long as the dorsum. First segment of the petiole twice as long as wide behind, longer than high, the posterior-dorsal face quadrate, the dorsal edge feebly emarginate in the middle.

Second node lozenge-shaped in outline, convex above transversely, the anterior margin more convex than the posterior, the sides angular but with the apex of the angle narrowly truncate, one-third wider than long, two and a-half times wider than the first segment. Abdomen longer than wide, the base subtruncate.

♀. 2.5–2.9 mm. Head brown, the anterior fourth paler. Thorax, petiole, antennae and mandibles dark ochreous, somewhat reddish. Legs ochreous, abdomen brown, more or less yellowish at the base. Pubescence and pilosity as in the ♂, but the clypeus has some long and outstanding hairs. Head, pronotum, petiole, legs and abdomen shining, the remainder of the thorax dull; the head duller than the pronotum. Head very faintly and closely reticulate, the middle of the vertex almost smooth, the sides in front of and above the eyes obliquely striate. Pronotum smooth, meso- and epinotum very finely reticulate. Both nodes nearly smooth, the abdomen smooth. Head longer than wide, not narrower in front than behind, the sides and posterior margin moderately convex. Eyes convex and fairly large, placed in the middle of the sides. Clypeus convex transversely and lengthwise, the anterior margin convex and entire. Frontal carinae feebly convergent behind, not extending back beyond the level of the front of the eyes. Scapes long, extending back as far as the middle of the pronotum. Mandibles very finely striate and sparsely punctured. Pronotum a little longer than wide, convex at the sides and above. Pro-mesonotal suture obsolete. Mesonotum with a feeble transverse impression, the part behind same longer than the part in front. Dorsum of epinotum twice as long as wide, one and a-half times longer than the moderately oblique declivity; spines similar to those of the ♂, but proportionately smaller and more oblique. First node as in the ♂, the dorsal edge more rounded transversely. Second node more or less bell-shaped, the sides convex, longer than wide, and twice as wide as the 1st node.

Redbank, S.R. Nesting in sandy soil. (S.A.M., R.M., G.A. colls.)

Var. *POLITOCIPUT*, Santschi.

Ann. Soc. Ent. France, vol. 84, p. 503, ♂, ♀, 1916.

♂. Colour similar to that of the type-species, but a little darker. Head a little longer than wide. The sculpture of the head differs from that in the type-species in ending rather abruptly at the posterior third, the head behind that point being smooth and shining, sparsely and fairly strongly punctured. The spaces between the striae on the middle of the head are finely and longitudinally rugulose, not shallowly

reticulate as in the type-species. The sides of the head are also more regularly striate and with fewer transverse bars, and the fundamental reticulation in that region is also much stronger. The occipito-frontal sulcus is deeper, the posterior emargination is deeper and more angular, the apex of the emargination being an acute angle. The posterior lateral angles of the pronotum are more pronounced, and the scutellar portion of the mesonotum is usually oblique and lacks the horizontal ledge present in the type. The lateral angles of the 2nd node are narrower and project further outwards owing to the greater width of the node, which is quite twice as wide as long. Otherwise like the type-species.

♂. Colour a little darker than in the type-species. The dorsum of the epinotum is very shallowly but fairly distinctly excavated longitudinally, *i. e.* concave transversely (flat or even a little convex in the type-species). The epinotal spines are less vertical. Otherwise like the type-species.

♀. 6.8 mm. Colour like that of the ♀, base of the abdomen reddish-brown. Head longitudinally striate in the middle between the frontal carinae, the sides of the head longitudinally rugose, with some transverse bars in addition. Back of the head, behind the level of the posterior ocelli, truncate and flattened, subvertical. The larger striae and rugae end at the brow of this truncation, which is only finely and obliquely striate and sparsely punctured. Mesonotum and scutellum smooth, shining, very sparsely and feebly punctured; the lateral margins in front of the tegulae, and two longitudinal bands internal to the parapsidal sutures, are rugulose or reticulate; the margins of the scutellum coriaceous. Metanotum, epinotum and petiole dull and transversely striate, closely and finely so on the nodes, the spaces between the striae coriaceous. Abdomen shining except the base, which is finely striate-reticulate and dull.

Head, excluding the mandibles, a little wider than long, wider behind than in front, the posterior margin straight, the posterior angles narrowly rounded. Mesonotum a little wider than long, rounded in front, flattened behind above; scutellum twice as wide as long. Dorsum of epinotum subvertical, concave transversely, not clearly delimited from the declivity. Epinotal teeth nearly horizontal, acute, parallel, not longer than their basal width, somewhat incurved towards their apices. Posterior-dorsal face of the 1st node wider than in the ♀, the dorsal edge shallowly emarginate in the middle. Lateral angles of the 2nd node more acute than in the ♀. Deälated.

♂. 5 mm. Mandibles, clypeus and the space between the frontal carinae and anterior ocellus brownish-yellow, the rest of the head

brownish-black. Thorax, nodes and abdomen yellowish-brown, the posterior margin of the scutellum, the sides of the mesonotum and the apical halves of the abdominal segments darker. Legs and antennae ochreous, all the femora darker in the middle. Head finely and longitudinally striate, fairly dull. Thorax sculptured as in the ♀, but the scutellum is also finely striate transversely. Nodes very finely striato-rugulose, transversely so on the upper face of the 1st, longitudinally on the 2nd. Abdomen smooth and shining, faintly aciculate and dull at the base.

Head trapezoidal, much wider in front than behind, the vertex high. The eyes occupy the anterior three-fifths of the head. Mandibles finely striate, narrow at the base, armed with three small teeth. Anterior margin of the clypeus shallowly emarginate in the middle. Frontal area dull and rugulose. Behind the frontal area there is a small elongate tubercle, and behind the latter a transverse impressed line joining the ends of the frontal carinae. Ocelli large and very prominent. Dorsum of epinotum longer than wide across its apex, feebly tuberculate on each side, one-third longer than the declivity, which is concave from above to below. Anterior face of 1st node, seen from the side, at least twice as long as the dorsal face, the dorsal edge rounded. Abdomen oblong, much longer than wide. Wings faintly tinged with brownish-yellow, the nervures bright yellow, the stigma brownish.

Bulawayo and Victoria Falls. (S.A.M., R.M., G.A. colls.)

P. MAUFEI, n. sp.

♀. 4-4.3 mm. Head, thorax and petiole varying from dark yellowish-red (burnt sienna) to brownish-red, the vertex of the head sometimes darker than the rest; abdomen varying from yellowish-red to brown, flagellum and legs dirty orange-yellow, the tarsi paler. Pilosity yellowish, oblique and fairly long, longest on the abdomen, most abundant on the sides of the head. Pubescence on the legs, antennae and mandibles long, oblique, fairly sparse; almost wanting on the body.

Head and thorax dull, with a fairly close fundamental reticulation. In addition, the head has a superimposed, coarse, rugose reticulation somewhat emphasised longitudinally, becoming fainter posteriorly, and obsolete in the middle third of the posterior half. Occipital lobes finely and transversely rugose on their inner halves. There are a few irregular rugae on the thorax, chiefly on the pronotum. Petiole and basal third of the 1st abdominal segment dull and finely reticulate,

the rest of the abdomen smooth and very shining. Clypeus almost smooth, with a strong median carina, the anterior margin distinctly excised in the middle. Mandibles striated at the base externally, the rest smooth and shining, sparsely punctured with large punctures.

Head, excluding the mandibles, about one-eighth longer than wide, very slightly narrowed in front of the eyes; behind the eyes the sides are straight and parallel as far as the posterior fifth, thence convex and convergent. Occipital lobes rounded, the posterior margin fairly deeply and arcuately emarginate, the occipito-frontal sulcus rather shallow. Head highest in the middle, not concave at the sides behind the eyes. The latter placed at about the anterior third of the sides, convex and not small. Scape of antenna long, extending back as far as the posterior fifth of the head; flagellum long and slender, all the joints much longer than wide. Pronotum short, its posterior lateral angles rounded and not prominent. Pro-mesonotal suture



FIG. 22A.—*P. Maujei*, n.sp.

obsolete. Mesonotum submarginate at the sides, transversely impressed in the middle, without a distinct transverse torus in front of the scutellar region. Meso-epinotal suture deep. Dorsum of epinotum at least one and a-half times longer than wide, almost flat, or only very feebly excavated longitudinally towards the apex. Epinotal spines vertical, barely divergent, thin, subacute, longer than their basal width and longer than the interval between their bases. Declivity as long as the dorsum of the epinotum. The peduncle of the 1st segment of the petiole is as long as the node; the latter has a thick dorsal edge which is feebly emarginate in the middle. Second segment of the petiole hexagonal, about one-fifth longer than wide, narrower in front than behind, the sides obtusely angulated. Abdomen a little longer than wide.

♀. 2.6–3 mm. Head, thorax and petiole varying from reddish-ochreous-yellow to yellowish-red, abdomen dark ochreous, or in some specimens pale piceous. Legs and antennae ochreous yellow. Pilosity shorter and less abundant than in the ♂, the pubescence on the legs and antennae more erect than in the ♂.

Head slightly shining, finely and superficially reticulate, except in the middle of the vertex anteriorly, which, like the clypeus and frontal area, is smooth and shining. A few fine longitudinal rugae between the eyes and frontal carinae. Mandibles shining, very feebly striate. Thorax dull, closely and finely reticulate, petiole and abdomen smooth and shining. Head ovoid, excluding the mandibles at least one-third longer than wide, much narrower behind than in front, the posterior margin being formed by the articular border only. Eyes large, convex, placed a little in front of the middle of the sides. Clypeus not carinate, shallowly emarginate in the middle anteriorly. Frontal area well-defined; frontal carinae slightly convergent behind; not reaching as far as the level of the front of the eyes. Antennae thin and very long, extending back as far as the middle of the abdomen, the scape alone reaching as far as the middle of the mesonotum; 2nd-8th joints of the flagellum twice as long as wide, or even longer. Pronotum long, without tubercles; pro-mesonotal suture obsolete. Mesonotum long and narrow, clearly longer than wide, and with a transverse impression at about its anterior third. Meso-epinotal suture deep. Dorsum of epinotum twice as long as wide, the teeth erect, feebly divergent, acute, and about half as long as the interval between their bases. First segment of petiole like that of the ♀, but with the dorsal edge convex transversely and not emarginate. Second segment of petiole pyriform, one-third longer than wide. Legs long and slender.

Belingwe, S. Rhodesia. The nest was placed in a hole in a tree-trunk, about 3 ft. from the ground, and contained decayed leaves and earth.

This species has some affinity to the *Prelli* group. It is also allied to *P. Escherichii*, Forel, by the shape of the head in the ♀, but differs from it in that caste by the length of the antennae, by the sculpture and the pyriform 2nd node; in the ♂ it differs by the carinate clypeus, the longer scapes and also the sculpture. In the ♀ it bears a strong resemblance to *P. areniphila*, Forel, especially in the shape of the head, but differs very considerably in the much longer antennae, the different sculpture of the pronotum, and the narrower and longer 2nd node. The ♂ is quite different from that of *areniphila*, as the head is differently formed and has no trace of a scrobe.

I have much pleasure in naming this species in honour of Mr. H. B. Maufe, Director of the Geological Survey, S. Rhodesia, whose hospitality enabled me to do some collecting in the rather out-of-the-way Belingwe district.

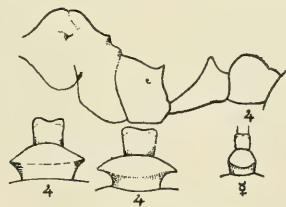
(S.A.M., R.M., G.A. colls., types in my collection.)

P CAPENSIS, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 746, ♀, 1862.

Forel, Ann. Soc. Ent. Belg., vol. 57, p. 130, ♀, 1913.

♀. 5-5.8 mm. Head varying from dark red to piceous, thorax yellowish-red, abdomen yellowish-brown, the apical halves of the segments darker, legs brownish-yellow to brown. Pilosity and pubescence much the same as in *Prelli*, but somewhat finer and more abundant on the head and mandibles. The middle of the anterior half of the head longitudinally striate, with some finer striae between the longer ones, the sides longitudinally rugose with a few transverse anastomoses, the spaces between finely reticulate. The anterior half of the head is moderately shining, the posterior half smooth, shining and very sparsely and finely punctured (a few striae extend beyond the middle at the sides of the occipito-frontal sulcus). Mandibles smooth, shining, with some scanty and elongate punctures, the basal half faintly striate. Thorax fairly shining; pronotum transversely, irregularly and finely striate, the striae stronger at the sides. Meso-

FIG. 23.—*P. capensis*, Mayr.

and epinotum, sides of the thorax, and the nodes finely reticulate-punctate, a few feeble transverse striae superimposed. Abdomen shining.

Head a little more than one-sixth longer than wide, widest at the posterior fourth, where it is about one-third wider than across the anterior margin. The posterior emargination is fairly deep and wide, but not acutely angular at the apex. Occipito-frontal sulcus well defined in its posterior half. Sides of the head between the eyes and frontal carinae not concave. The latter extend back nearly to the middle of the head. Frontal area smooth, shining and depressed. Eyes placed at the anterior third of the sides. Clypeus fairly strongly carinate in the middle, the anterior margin feebly concave. Posterior lateral angles of the pronotum subacute, projecting very slightly outwards, much more pronounced than in *Prelli-redbankensis*. The

pro-mesonotal suture is fairly clearly indicated. The transverse impression of the mesonotum is shallow and the upper face of the scutellar region has a small tubercle at each corner. Metanotum not clearly defined. Dorsum of epinotum a little wider at the apex than it is long, shallowly concave transversely; epinotal teeth small, vertical, acute, hardly as long as their basal width, considerably shorter than the interval between their bases. Dorsal edge of 1st node thinner and more deeply emarginate than in *Prelli-redbankensis*, otherwise similar; 2nd segment almost twice as wide as long, the lateral angles placed in front of the middle of the sides, acute, or sometimes produced into fairly distinct teeth.

♀. 2.5 mm. Brownish-yellow, the head and sides of thorax somewhat darker, the head more reddish than yellowish-brown. Pilosity as in *Prelli*. Head very finely and longitudinally rugulose, the vertex smooth and shining, the rest of the head only moderately shining, in front striate between the eyes and frontal carinae. Mandibles longitudinally striate and subopaque. Pronotum shining, smooth on the disc, faintly rugulose elsewhere. Meso- and epinotum reticulate-punctate and dull. Nodes and abdomen smooth and shining. Posterior margin of the head straight (convex in *Prelli*), the posterior angles widely rounded, but fairly distinct. The head is wider behind than in front and as long as wide. Meso-epinotal suture and the transverse impression of the mesonotum fairly deep. Dorsum of epinotum flat, twice as long as wide and as long as the declivity. Epinotal teeth small and acute. Posterior-dorsal face of the 1st node a trifle longer than wide; 2nd node about as long as wide, the anterior half convex, the posterior half subparallel-sided.

♀. 7 mm. Piceous, head dark reddish-brown, mandibles and antennae ferruginous, tarsi brownish-yellow, apices of the tibiae and femora pale brown. Vertex of head longitudinally striate, the sides longitudinally rugose, the spaces between the rugae reticulate. Mesonotum and scutellum shining, very sparsely and finely punctured, the mesonotum also faintly rugulose posteriorly; metanotum, sides of epinotum and the nodes coriaceous and dull, with a few rugae superimposed. Declivity of epinotum smooth and shining, the space between the teeth feebly and transversely striate. Abdomen smooth and shining, finely and sparsely punctured. Head subquadrate, slightly narrower in front than behind, the posterior margin straight, the posterior angles rounded. Mesonotum, seen from above, almost circular, slightly wider than long, rounded in front, flat behind. Dorsum of epinotum very oblique, forming a single plane with the declivity. Epinotal teeth smaller than in the ♀, their bases wide and

tumid. Nodes as in the ♀, but proportionately wider and stouter. Deälated.

Capetown, Willowmore and Kimberley. (S.A.M., R.M., G.A. colls.)

The shape of the second segment of the petiole in the ♀ is variable, even in examples taken from the same nest. In some the sides are merely acutely angular, in others the angles are produced into more or less prominent teeth or spines. For this reason it appears to me that the race *Dregei*, Emery (Ann. Soc. Ent. France, vol. 63, p. 34, 1895), which differs only in its greater size (6-6.5 mm.) and more produced sides of the 2nd node, should be regarded as no more than a slight variety. It has been recorded from Kimberley, Makapan, Bloemfontein and Delagoa Bay.

P. XOCENSIS, Forel. (Plate VI, fig. 68.)

Deutsch. Ent. Zeitschr. Beiheft, p. 213, ♀, 1913.

♀. 4.9-5.4 mm. Head and thorax varying from dark castaneous red to dark reddish-brown, the anterior fourth of the head, the occipital lobes and the epinotum always paler; mandibles bright castaneous red, with the margins piceous; flagellum and legs reddish-yellow, abdomen dark brown. The pilosity is composed of much thinner hairs than in *capensis* and is more oblique, and on the abdomen more abundant. The sculpture is very similar to that of *capensis* and differs only as follows. The coarser sculpture on the head extends over the anterior two-thirds, and the posterior third is duller than in the other species, being very finely rugulose or reticulate, and as this is also the fundamental sculpture of the anterior portion, the coarse sculpture does not appear to end so abruptly as in *capensis*. The median area of the clypeus is almost smooth, not longitudinally striate as in *capensis*. The mandibles are more finely punctured. The striae on the thorax are a little coarser and the dorsum of the epinotum is very shining and almost smooth. Nodes rugulose, also finely and transversely striate. Base of abdomen distinctly and finely reticulate, with a few short striae as well (without sculpture in *capensis*). The rest of the abdomen smooth, shining and sparsely punctured.

Head, excluding the mandibles, one-fourth longer than wide, the sides parallel, the posterior emargination narrower but much less deep than in *capensis*, the occipital lobes less prominent and wider at the apex than in *capensis*. The occipito-frontal sulcus is deeper and in its posterior half margined on each side by a thin ridge. Mandibles stouter and more convex externally (I cannot see in any of the

specimens before me the longitudinal groove between the inner and outer margins which is mentioned by Forel). Median area of clypeus not carinate, the anterior margin shallowly concave. Frontal area much smaller than in *capensis*, indistinctly defined and not depressed (deeply depressed in *capensis*). The pronotum is wider in relation to its length than in *capensis*, and the posterior lateral angles are larger and more prominent. The pro-mesonotal suture is distinctly defined by a transverse ridge. The posterior margin of the scutellar region of the mesonotum is tumid and raised on each side into a small but distinct tubercle (only faintly indicated in *capensis*). The dorsum of the epinotum is more concave and the epinotal teeth are longer and more divergent; they are longer than their basal width and half as long as the space between their bases. First node wider than in *capensis*, the dorsal edge more deeply emarginate. Second node shorter, its lateral angles spinose, the apices blunted. Abdomen



FIG. 24.—*P. xocensis*, Forel.

longer and narrower, the sides only feebly convex, longer than wide.

♂. 2.3–2.6 mm. Dark brown, epinotum and petiole paler, legs, mandibles and antennae brownish-yellow. Moderately pilose, the hairs on the abdomen longer than elsewhere, the pubescence on the legs and antennae very sparse. Shining and fairly smooth. The sides of the head between the eyes and frontal carinae only very faintly striate. Epinotum and sides of mesonotum reticulate-punctate and dull. Head more or less oval, a trifle longer than wide, a little narrower behind than in front, the posterior margin very shallowly concave and narrower than in *capensis*, the posterior angles more convex. Mandibles shining, feebly striate and punctate. Eyes placed in the middle of the sides of the head. Scapes a little longer than in *capensis*, extending beyond the posterior margin of the head by twice the length of the first joint of the flagellum. Mesonotum longer and at a higher level above the epinotum than in *capensis*, its transverse impression much shallower. Dorsum of epinotum narrower, two-thirds longer than wide. The first segment of the petiole is a little shorter, the node thicker than in *capensis*. Second segment a little

longer than wide, as wide behind as in front (wider in *capensis*), the sides distinctly angular in the middle.

Xoce River, S. Rhodesia. (S.A.M., R.M., G.A. colls.)

Var. BULAWAYENSIS, Forel.

Loc. cit., p. 215, ♀, ♂.

♀. Like the type-species but darker, brownish-black. The fundamental sculpture of the head is stronger, even on the posterior third, so that the whole head is duller than in the type.

♂. Brownish-black, including the epinotum. The reticulate-punctate sculpture of the epinotum and sides of mesonotum much sharper than in the type-species. (The dorsum of the mesonotum is smooth and shining, not reticulate-punctate as erroneously stated in Forel's description.) The posterior lateral angles of the pronotum are raised into distinct bosses and the second segment of the petiole has the sides convex. Otherwise like the type of the species.

Bulawayo. (S.A.M., R.M., G.A. colls.)

This and the type-species are at least partly graminivorous, as the nests contained accumulations of grass seeds.

P. ARNOLDI, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 130, ♀, ♂, 1913.

♀. 4 mm. Dark brown, sometimes the posterior half of the head and the pro-mesonotum paler or castaneous brown. Antennae, excluding the basal half of the flagellum, and the femora brown, tibiae yellowish-brown, tarsi and basal half of flagellum brownish-yellow. Pilosity yellowish, short and more or less erect on the head, longer but less abundant on the thorax, much longer and fairly abundant on the abdomen. Pubescence yellowish, scanty on the body, more abundant on the legs and antennae.

Anterior half of the head moderately shining, longitudinally striate and reticulate at the sides, striate on the vertex between the frontal carinae (the striae divergent); the spaces between the striae at the sides somewhat roughened. Posterior half of the head polished and shining, sparsely and finely punctured. Pronotum and disc of mesonotum shining, nearly smooth in the middle, faintly rugulose and transversely striate in front and at the sides. Epinotum and sides of mesothorax reticulate and dull. Nodes transversely rugulose, moderately shining. Abdomen shining, feebly and longitudinally rugulose at the base.

Head, excluding the mandibles, a little longer than wide, wider and higher in front than behind, the sides straight, the posterior emargination deep and angular at its apex, the occipital lobes prominent, narrowed apically. Occipito-frontal sulcus deep in its posterior third, shallow in front. Median area of clypeus rather narrow, strongly carinate in the middle, the anterior margin nearly straight. Frontal area triangular, shining, very slightly depressed. Mandibles smooth and shining, armed with two obtuse teeth at the apex. The scapes extend back to the middle of the head. Pronotum wider than long, the posterior lateral angles fairly prominent but rounded at the apices. Pro-mesonotal suture faintly indicated. Mesonotum sloping steeply downwards in its anterior portion, the scutellar region horizontal above and vertical behind, the margin between the two planes transversely concave and slightly produced. Dorsum of epinotum horizontal, about as long as wide, armed with two sharp, slightly

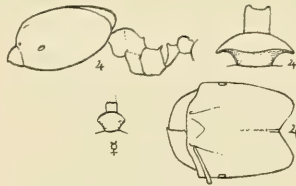


FIG. 25.—*P. Arnoldi*, Forel.

divergent and nearly vertical spines, which are longer than their basal width and as long as the interval between their bases. The declivity of the epinotum is slightly oblique and as long as the dorsum. First segment of the petiole very little longer below than high, the dorsal edge feebly concave, the posterior-dorsal face as long as wide, parallel-sided. Second segment a little more than twice as wide as long, the anterior margin convex, the sides produced into fairly acute teeth curved backwards. Abdomen longer than wide, the sides moderately convex.

♀. 1·8–2·3 mm. Dark brown, abdomen blackish-brown, legs and antennae dark yellowish-brown, the femora darker, mandibles pale reddish-brown. Pilosity and pubescence sparser than in the ♂, especially on the abdomen. Head and thorax closely reticulate-punctate and dull; nodes and base of abdomen finely reticulate and dull, the rest of the abdomen and the legs smooth and shining. Head as wide as long, widest across the eyes, narrower behind than in front, the sides feebly convex, the posterior margin nearly straight. Eyes fairly large, placed in the anterior third of the sides. Frontal carinae

subparallel, not extending beyond the anterior third of the head. Frontal area rather large. Clypeus feebly carinate in the middle. Mandibles sparsely punctured and shining, the basal half striate. The scapes extend beyond the posterior margin of the head by one and a-half times their apical width. Pro-mesonotal suture obsolete (in Forel's description erroneously stated to be distinct). The posterior lateral angles of the pronotum bear a minute tubercle, not easily seen. Meso-epinotal suture distinct. Mesonotum shallowly impressed transversely in the middle. Dorsum of epinotum flat, one and a-half times longer than wide, bearing two minute and vertical teeth, much shorter than the interval between their bases. Declivity shorter than the dorsum. Dorsal edge of the first node of petiole not emarginate, the second node one-third wider than long, convex in front, the sides obtusely angular, sometimes with the angles produced into short truncated cones. Abdomen subtruncate at the base, longer than wide.

♀. 5.7 mm. (hitherto undescribed). Brownish-black; tarsi and apices of the femora and tibiae brownish-yellow, mandibles ferruginous. Pilosity and pubescence as in the ♀. Head longitudinally and rather closely striato-rugose, the spaces between the striae rugulose and dull, except between the frontal carinae, where they are slightly shining. Mandibles more strongly punctured than in the ♀. Mesonotum very closely and finely striate and dull, the striae converging posteriorly; a median patch in front and a lateral one on each side over the parapsidal sutures are smooth and shining. Scutellum smooth, shining and very sparsely punctured. Epinotum smooth and shining in the middle, rugulose at the sides. Nodes dull and rugulose. Abdomen moderately shining, the first segment and the apical margins of the following segments finely punctured. Head as wide as long, a trifle wider behind than in front, the posterior margin straight, the sides parallel or very slightly convex in their posterior third, the posterior angles moderately acute. Clypeus and antennae as in the ♀, the frontal carinae longer. Eyes not very large, ocelli slightly depressed. Mesonotum flat, convex only in front, a little wider than long. Scutellum semicircular, less than half as long as the mesonotum. Dorsum of epinotum obsolete in the middle, forming a continuous vertical plane with the declivity. Epinotal teeth stout, triangular, shorter than their basal width. Posterior-dorsal face of the first node wider than long, 2nd node nearly three times wider than long, the lateral spines longer and thinner than in the ♀. Abdomen one and a-half to one and two-thirds longer than wide, the sides subparallel. Wings feebly fuscous, nervures pale yellow, stigma pale brownish-yellow.

♂. 4 mm. (hitherto undescribed). Black; mandibles, antennae and tarsi dirty brownish-yellow. Pilosity longer and more abundant than in the ♀. Head, thorax and nodes very closely and finely reticulate, punctate and dull, except the middle of the epinotum, which is only reticulate, and the scutellum, which is smooth and shining. There is also a fairly smooth and shining median longitudinal area on the mesonotum. Abdomen smooth and shining, the extreme base dull and very finely reticulate. Head widest in front, a trifle wider than long, the sides behind the eyes with the posterior margin forming a semicircle. Eyes placed in the anterior half of the head, occupying a little less than half of the sides. Frontal carinae obsolete. Mandibles small, quadridentate. Scapes when extended outwards not reaching the outer margin of the eyes; first joint of flagellum globose, as wide as long, the remaining joints all longer than wide. Mesonotum very convex transversely in front, one-third wider than long. Scutellum moderately convex lengthwise, half as long as the mesonotum. Dorsum of epinotum widest at the base, twice as wide as long, feebly bituberculate. First node one and a-half times wider than long, the dorsal edge convex transversely; 2nd node hardly half as wide again as the 1st, twice as wide as long, the sides produced into shorter and less acute teeth than in the ♀. Abdomen longer than wide. Wings as in the ♀.

S. Rhodesia, fairly common. It is a largely graminivorous species, and forms rather populous nests which are rarely placed more than 6 in. below the surface of the soil. (S.A.M., R.M., G.A. colls.; types of ♀ and ♂ in my collection.)

Var. *BALLAENSIS* n. v.

♂. 4.8–5 mm. Apart from its greater size, this form differs from the type in the following characters: The colour is paler, the head and pronotum bright castaneous red, the base of the abdomen yellowish-brown. The head is from one-fourth to one-third longer than wide; the occipital emargination is much deeper, and acutely angular at its apex. The pronotum is more angular and wider behind, the angles marginate. The pro-mesonotal suture is deeper, and the scutellar region is margined at the sides by a raised line. The dorsum of the epinotum is wider and less coarsely reticulate.

♀. 2.3 mm. Body dark blackish-brown. Head not wider in front than behind; an oblong area in the middle of the posterior half of the pronotum is shining and has the sculpture more or less effaced. Second node of petiole less angular at the sides. Otherwise like the type of the species.

Balla-Balla, S. Rhodesia. (R.M., G.A. colls.; types in my collection.)

Var. RUFESCENS, n. v.

♂. Differs from the type of the species in the following characters: Head, thorax, petiole and legs bright yellowish-red, abdomen dark brown or black. The sculpture of the head is much finer and closer and extends further back, only the posterior third of the head being smooth. The head is parallel-sided and longer than the type-species, and the occipito-frontal sulcus is deeper and extends forwards almost to the posterior angle of the frontal area. The sculpture of the thorax is finer than in the type. The posterior lateral angles of the pronotum are very obtuse, and the epinotal spines are shorter. Petiole similar to that of the type, but the lateral spines of the 2nd node are shorter.

♀. A little smaller than the type-species, the puncturation of the head, thorax and nodes much finer. The sides of the 2nd node are barely angular. Otherwise like the type of the species.

Sipapoma and Victoria Falls, S. Rhodesia. (S.A.M., R.M., G.A. colls.; types in my collection.)

A form of the type-species having the head brightly coloured also occurs, but it can be distinguished from *rufescens* by the sculpture and the shorter head of the ♂.

PHEIDOLE STRATOR, Forel, race FUGAX, n. r.

Forel, Zool. Jahrb., vol. 29, p. 256, 1910.

♂. 3.8-4 mm. Differs from the description of the type of the species as follows:

Colour darker, head reddish-brown, thorax and abdomen very dark-brown or piceous, legs and scapes brownish-yellow, tarsi and flagellum ochreous, mandibles pale burnt-sienna, the masticatory margins black. The vertex is only longitudinally striate, the striae fairly fine, widely spaced, and extending back to a little beyond the middle. The sides of the head as far as the base of the occipital lobes are very finely reticulate and subopaque, with a stronger sculpture of longitudinal rugae superimposed, which are strongest in front. The dorsal surface of the two nodes and the extreme base of the abdomen very superficially reticulate. The dorsum of the epinotum is as long as, or even longer than wide, and only very indistinctly marginate at the sides. The head is widest at the beginning of the posterior third, and is very nearly half as long again as wide (excluding the mandibles).

♀. 1.8-2 mm. Piceous, legs and scapes yellowish-brown, tarsi, flagellum and mandibles fuscous ochreous. Sides of petiole and mesonotum reticulate. Otherwise just like the type of the species.

Amatongas Forest, Portuguese E. A. Under the bark of a decayed tree. (R.M., G.A. colls.; types in my collection.)

P. strator, *termitophila* and *Schoutedeni*, Forel, are all closely allied; *P. platycephala*, Stitz, appears to be, judging from the description, only a colour variety of *P. Schoutedeni*, Forel.



FIG. 25A.—*P. strator*, Forel, race *fugax*, n. r.

P. (sub-genus ALLOPHEIDOLE, Forel) *CUITENSIS*, Forel, race
REDDERSBURGENSIS, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 437, ♂, ♀, 1910.

(Race) Ann. Soc. Ent. Belg., vol. 57, p. 135, ♂, ♀, ♀, ♂, 1913.

♂ major. 4.2–5.5 mm. Dark castaneous red, the occipital lobes, the pronotum, and sometimes also the basal half of the abdominal segments of a brighter tint. Pilosity moderately abundant all over,



FIG. 26.—*P. cuitensis*, Forel, race *reddersburgensis*, Forel.

including the legs, antennae and mandibles, more oblique on the legs than elsewhere, and on the flagellum intermixed with a shorter pubescence. Anterior half of the head slightly shining, fairly strongly and longitudinally striate, the spaces between the striae on the cheeks reticulate-rugulose; the posterior half of the head smooth and shining, very finely and sparsely punctured. The sides of the occipito-frontal sulcus longitudinally striate. Mandibles smooth, shining, sparsely punctured. Thorax fairly shining, finely and irregularly striate transversely above, obliquely at the sides, and also more or less rugulose at

the margins of the dorsum. Both nodes transversely rugulose and dull above. Abdomen and legs smooth and shining. Head, excluding the mandibles, as long as, or a little longer than wide, widest in the posterior half, the occipital emargination wide and fairly deep, not acutely angular at its apex. Occipito-frontal sulcus shallow in front. Eyes small, placed at the anterior fourth of the head. Frontal carinae divergent, not extending back beyond the level of the hind margin of the eyes. Clypeus with a fine median carina, shallowly emarginate in front. Frontal area small and depressed. The scapes do not extend back beyond the middle of the head. Posterior lateral angles of the pronotum prominent and rounded at their apices. Pro-mesonotal suture defined as a raised line. The transverse impression of the mesonotum shallow, the scutellar portion short, not clearly defined in front, slightly tuberculate on each side. Metanotal region indistinct. Dorsum of epinotum widening towards the apex, a little wider than long, moderately excavated in the middle and more or less margined at the sides; epinotal spines a trifle longer than their basal width, acute, divergent, hardly half as long as the interval between their bases; the declivity longer than the dorsum. First joint of the petiole a little longer than deep, the posterior-dorsal face a little wider than long, the dorsal edge shallowly emarginate. Second node two and two-thirds wider than the first, twice as wide as long, convex in front, concave at the sides behind the spinose projections, the latter varying from mere cones to more or less distinct, backwardly-curved teeth. Abdomen truncate at the base.

♂ minor. 4.6 mm. or less. The head is as wide or a little wider in front than behind. Epinotal teeth shorter. The lateral projections of the 2nd node shorter and more obtuse. Otherwise like the ♀ major.

♀. 2.2-3.4 mm. Reddish-brown, the abdomen almost dark-brown, the pro-mesonotum sometimes yellowish-brown, shining. Sides of the head between the eyes and frontal carinae very shallowly reticulate, the sides of the meso- and epithorax more strongly reticulate-punctate, mesonotum shallowly rugulose, dorsum of epinotum feebly reticulate, mandibles finely striate and subopaque, the rest of the body smooth. Pilosity less abundant than in the ♂.

Head about as long as wide, the sides fairly convex. Frontal carinae parallel, extending back as far as the middle of the head. The scapes extend beyond the hind margin of the head by about the length of the eye. Posterior lateral angle of the pronotum rounded. Transverse impression of the mesonotum very shallow. Dorsum of epinotum longer than wide, faintly margined at the sides; the epinotal teeth small, acute, subvertical, half as long as the interval between their

bases. First joint of petiole long, twice as long as deep; 2nd joint a little wider than long, the sides moderately angular.

The larger ♂ ♀ differ in having the sculpture stronger, the pilosity longer, the scapes shorter or not extending beyond the occipital margin. The 2nd node is also wider and more acutely angular at the sides.

♀. 6.6–7.2 mm. Dark brown or piceous, the anterior half of the head, the paraptera and the median portion of the nodes above paler; the 1st segment of the abdomen also paler or reddish-brown. Antennae, mandibles and legs ferruginous. On the abdomen the pubescence is intermixed with longer pilose hairs; legs and antennae with a long and oblique pubescence. Head dull, closely and longitudinally striate, on the sides also reticulate. Mesonotum and scutellum smooth and shining, very sparsely punctured, the base of the mesonotum also superficially rugulose. Epinotum transversely striate and dull. Petiole rugulose and dull. Abdomen shining, finely and sparsely punctured. Mandibles smooth, shining and punctured. Head quadrate, a little wider than long; eyes placed in front of the middle. Clypeus with a feeble median carina. The scapes do not reach the posterior margin of the head. Mesonotum fairly flat above. Epinotal spines stout, blunt at the apex, one-third as long as the space between them. The petiole differs from that of the ♂ in having the posterior-dorsal face of the first node much wider than long, and steeper, the dorsal edge more deeply emarginate. The 2nd node has larger lateral teeth, which are strongly curved backwards. Wings brownish-yellow, the nervures pale brown.

♂. 5.5 mm. Black; antennae, legs and mandibles brownish-yellow, abdomen dark brown. Pilosity and pubescence as in the ♀, the sculpture on the head and epinotum finer than in that sex, but on the posterior half of the mesonotum somewhat stronger. Head trapezoidal, highest behind, much wider in front than behind. Eyes occupying the anterior half of the head; ocelli very prominent. Scapes not much longer than the 2nd joint of the flagellum; the 1st joint of the latter globose, the remaining joints all longer than wide. Mandibles 4-dentate, finely aciculate. Clypeus gibbous. Mesonotum similar to that of the ♀ but more convex in front; scutellum slightly gibbous, not flat as in the ♀. Epinotum with two very obtuse and flattened angles. Dorsal edge of 1st node much less deeply emarginate than in the ♀; 2nd node finely and longitudinally striate, subdentate at the sides. Wings as in the ♀.

Reddersburg,* O.F.S. (Dr. H. Brauns).

* The name of this race was written as *reddensbergensis* by its author, and should be amended so as to accord with the name of the locality in which it was found.

The species, which have polymorphic ♂ ♀, have been placed by Dr. Forel in a distinct subgenus, *Allophoidole* (Mem. Soc. Ent. Belg., vol. 19, p. 237, 1912).

P. SPINULOSA, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 438, ♀, ♂, ♀, ♂, 1910.

"♀. 5-5.6 mm. Mandibles smooth, abundantly punctured, the external margin feebly convex, with 3 or 4 large striae (*teeth?*). Clypeus carinate and emarginate. Frontal carinae divergent, rather short, as far apart from each other as they are from the sides of the head. Head of a rounded trapeze shape, a little longer than wide, narrowed in front, the sides but little convex, fairly deeply emarginate behind, the occipital groove continuous with the frontal groove. Eyes placed in the anterior third. The scape hardly extends beyond the middle of the head. No trace of a scrobe, only a slight depression present for the base of the scapes. Posterior lateral angles of the pronotum prominent. There is a wide and very superficial transverse impression in the middle of the mesonotum; behind the same there is a transverse torus which is not high. Dorsum of the epinotum not marginate, as wide as long, a little longer than the declivity. Spines shorter than half the wide space between them. First node high, the dorsal edge emarginate, the peduncle rather short. Second node a little more than twice as wide as long, bearing on each side a fairly long and pointed spine, curved backwards. Epinotum and nodes dull or subopaque, finely reticulate, punctate and transversely striate. The rest shining. Anterior half of the head coarsely and longitudinally striate or rugose. Promesonotum superficially rugose transversely; the rest more or less smooth. The occiput has some fairly large and scanty punctures, and the abdomen some piligerous punctures. Erect pilosity yellowish, very sparse, inclined slightly backwards on the body. The tibiae and scapes have only adpressed hairs, which are also scattered over the body. Yellowish-red, the abdomen light brown, the limbs yellowish, or the thorax light brown, with the antennae, tarsi and articulations yellowish. The colour varies between these two extremes.

"♂. 2-2.4 mm. Head quadrate, slightly narrowed in front, the posterior margin feebly concave. Eyes placed in the middle of the sides.

"Clypeus finely carinate. Mandibles dentate, shining, finely striate. The scape extends beyond the occiput by one-fifth to one-sixth of its length. Posterior lateral angles of the pronotum distinct.

Transverse impression of the mesonotum very weak but appreciable. Dorsum of the epinotum one and a-half times longer than wide, with two pointed teeth. First node cuneiform, 2nd node at least twice as wide as the 1st, the sides angular. Sculpture as in the ♀, but the nodes and thorax have no distinct rugae, merely reticulate (including the mesonotum in part). Pilosity as in the ♀. Head and thorax yellowish-brown, the thorax often yellowish.

“♀. 6·8 mm. Head quadrate, wider than long, a little narrowed in front, entirely rugoso-striate, as wide as the thorax. The latter flattened above. Declivity of epinotum marginate and longer than the dorsum, the latter not marginate. Spines short, triangular and pointed. Petiole as in the ♀, but the lateral spines of the 2nd node are shorter and much thicker, also slightly obtuse. Entirely brown, with the front of the head reddish, the antennae, tibiae and tarsi yellowish rusty-red. Wings tinged with rusty-yellow, the stigma brownish, the nervures brownish-yellow.

“♂. 6-6·3 mm. Mandibles yellow, with 4 or 5 teeth. Scape two and a-half times longer than wide. Head rounded, a little wider than long, half as wide as the thorax. Epinotum with two elongate and very obtuse tubercles. Petiole as in the ♀, but the lateral spines are reduced to strong pointed cones. Head rugose-reticulate, fairly dull.

“Epinotum and a part of the mesonotum finely rugoso-striate longitudinally. Nodes reticulate. Erect pilosity a little more abundant on the body. Black or very slightly brownish-black. Mandibles, legs and antennae yellowish, coxae brownish. Otherwise like the ♀.

“Basutoland (Wroughton).”

Race MESSALINA, Forel.

Loc. cit., p. 440, ♀, ♂.

“♀. 5 mm. Mandibles less punctured and more striated, the external border more convex. Clypeus hardly carinate. Head more oval, the sides distinctly more convex, as much narrowed behind as in front. Posterior lateral angles of the pronotum more obtuse, wider and less prominent. Transverse impression and torus of the mesonotum barely appreciable. On the other hand, there are two fairly distinct carinae on the posterior half of the mesonotum. First node much thinner and more squamiform, emarginate at the summit. Second node as in the type of the species. Smoother than the latter; head and abdomen almost impunctate; pro-mesonotum without rugae. Epinotum and nodes reticulate and subopaque, with a few striae; anterior half of the head more closely and more finely striate, with

fine reticulations in between. Pilosity identical, of a faintly yellowish-red colour. Abdomen and limbs rusty or brownish-yellow.

“♂. 5.5 mm. Mandibles tridentate. Scape hardly longer than wide. Head short, much wider than long, two-thirds as wide as the thorax, which is much narrower than in the type. Epinotum without tubercles. Second node with two small lateral teeth. Shining; head with a few striae and reticulations. Nodes reticulate. Of a dirty-yellow colour. Posterior part of the head brown. A few brownish cloudy patches on the thorax and abdomen. Wings subhyaline, faintly tinged with yellow, the nervures and stigma yellowish.

“Basutoland (Wroughton). On account of the spines of the 2nd node in the ♀ I place this form as a subspecies of *spinulosa*. But the shape of the head and the entirely different ♂ seem to indicate that one is dealing with a distinct species. More material alone can settle this point.”

Race MESSALINA, var. NEXA, Forel. (Plate VI, fig. 70.)

Ann. Soc. Ent. Belg., vol. 57, p. 129, ♀, ♀, 1913.

♀. 5.7–6.6 mm. Head, thorax and nodes dark brownish-red, the abdomen piceous. The colour is sometimes much lighter, in which case the head, thorax and nodes are of a foxy-red, and the abdomen dark brown. In all, the clypeus and occipital lobes are darker than the rest of the head, and the basal third of the abdomen is paler. Mandibles dark castaneous red. Legs and antennae dull reddish-yellow, the tibiae and femora brownish in the middle. Pilosity short and rather sparse, except on the legs and abdomen. The sculpture of the head hardly extends beyond the anterior third, or a little behind the level of the hind margin of the eyes; the rest of the head is smooth, shining, very sparsely and very finely punctured, except the occipital lobes, which are fairly closely punctured with large, shallow and piligerous punctures. The head, excluding the mandibles, is as long as wide, widest a little behind the middle, plainly narrower in front than behind. The occipital emargination wide, not very deep, and not acutely angular at its apex. Posterior lateral angles of the pronotum prominent, their apices rounded. Pro-mesonotal suture defined by a raised line. Transverse impression of the mesonotum shallow; the scutellar region limited above by a transverse carina on each side. Meso-epinotal suture deep. Dorsum of epinotum shallowly excavated between the spines, and merging gradually into the longer declivity. First segment of the petiole differs in shape from that of

all the preceding species in having the dorsal face much wider than long (half as wide again as long), and in the sides, which are angular in the middle. The 2nd segment is a little more than twice as wide as long; the lateral spines, which vary in their degree of acuteness, are narrow and longer than their basal width.

The \mathcal{U} of *nexa* differs from the species and race as follows: "Head longer than in the type of the species and also longer than in the race *messalina*, . . . The occiput has large piligerous punctures which do not occur in *messalina*, and are very feeble and scanty in the type of the species. The colour is also darker."

♀. 1.8–2.5 mm. Dark brown, the antennae, mandibles, tarsi and articulations of the legs of a dirty ochreous colour. The thorax is usually lighter than the head and abdomen, sometimes yellowish-brown. Sides of mesonotum, mesopleura and all the epinotum evenly reticulate and slightly shining, the rest of the body smooth and shining. There are a few striae between the eyes and frontal carinae.



FIG. 27.—*P. spinulosa*, Forel, race *messalina*, var. *nexa*, Forel.

The latter parallel, extending back as far as the middle of the head. Posterior lateral angles of the pronotum fairly large. Dorsum of epinotum longer than wide, the basal half convex lengthwise, the spines small and acute. The 1st segment of the petiole longer than deep; 2nd segment a little longer than wide, feebly angulated at the middle of the sides.

♀. 9 mm. (hitherto undescribed). Black, the antennae, tarsi and joints of the brownish tibiae and femora brownish-yellow. Head rather feebly and longitudinally striato-rugose, the occipital angles shallowly punctured. The metanotum is unusually prominent, overhanging the base of the epinotum. The dorsal part of the latter is very steep and much more deeply excavated than in the \mathcal{U} ; the epinotal teeth are short, triangular, and directed outwards and backwards, not vertical as in the \mathcal{U} . The petiole is similar to that of the \mathcal{U} , but the dorsal edge of the 1st node is more deeply emarginate, and the lateral spines of the 2nd node more obtuse and shorter. Deälated.

Bulawayo, Plumtree, S. Rhodesia. Generally nesting under stones. A rather sluggish species and not common. (S.A.M., R.M., G.A. colls.)

Race MESSALINA, var. POWERI, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 241, ♀, 1914.

♀. 6-6.5 mm. Colour lighter than in *neva*, especially on the ead. The sides of the latter are more convex and the transverse impression of the mesonotum much shallower or almost obsolete. Otherwise like var. *neva*.

♀. 2.5-2.6 mm. Larger than var. *neva* and of a paler colour. The 2nd node of the petiole is wider, with the sides sometimes produced in the middle into small, subacute cones. The reticulate-punctate sculpture of the meso- and epinotum is finer than in *neva*.

Kimberley (Brother J. H. Power). (S.A.M., R.M., G.A. colls.)

P. SCHULTZEI, Forel.

Schultze, Reise Süd. Afrika, vol. 4, p. 9, ♀, ♂, 1910.

"♀. 5-6 mm. Mandibles striate and punctate, partly smooth towards the apex. Head 2.15 mm. wide and 2.4 mm. long, excluding the mandibles, rectangular, the sides nearly straight, somewhat narrower behind than in front, deeply excised behind so as to form a hemisphere on each side. The occipital emargination is acutely angular at the apex and is continued into the occipital groove; the latter is also continuous with the frontal groove. Eyes small, almost flat, placed in the anterior fourth. The short scape extends back just to the middle of the head, and when directed outwards hardly extends beyond the lateral margin. Clypeus carinate, feebly emarginate. Frontal carinae short, straight and divergent. Pronotum strongly arched, bearing above and below very blunt and indistinct prominences. Mesonotum with a transverse impression at the posterior third and behind it a transverse torus, beyond which the surface falls steeply to the dorsum of the epinotum, which is flat lengthwise. The latter is somewhat longer than wide, channelled along its length, with two small raised margins. Epinotal teeth acute, triangular, shorter than the interval between them; the declivity transversely rugulose, as long as the dorsum. Dorsal edge of the 1st node almost trenchant and emarginate; 2nd node twice as wide as long, produced at the sides into two long and pointed teeth. Fairly abundantly punctured all over with piligerous punctures. Head dull, reticulate-punctate, and longitudinally striate in front, shining and shallowly reticulate behind. Thorax irregularly striate; the disc of the pronotum nearly smooth; 2nd node transversely rugulose. Abdomen fairly smooth. The hairs of the scapes and body short,

pointed, yellowish and exserted, on the tibiae decumbent. Yellowish-red; mandibles and clypeus brown. Abdomen and scapes brownish-yellow, legs and flagellum yellowish (the abdomen is more yellowish in front and browner behind).

“♀. 2·2 mm. Mandibles sculptured as in the ♂, armed with two sharp teeth in front and about six distinct but smaller ones behind. Head as wide in front as long, narrower behind, the occipital margin convex. The scape extends beyond the occipital margin by one-third of its length. Eyes convex, fairly large. Mesonotum without a transverse torus, only a very wide and shallow transverse impression present. Posterior lateral angles of the pronotum obtuse. Mesoeipinotal suture strong. Epinotum almost unarmed, with only two very small tubercles; the dorsum convex, a little longer than the declivity. First node not emarginate above, the 2nd longer than wide, wider behind, without lateral teeth. Puncturation as in the ♂. Posterior half of the thorax dull and finely reticulate; head shallowly reticulate, reticulate-rugulose in front. Otherwise shining and fairly smooth. Pilosity as in the ♂, but more oblique on the scapes and tibiae. Head brown, except the front part, which is brownish-yellow like the rest of the body.

“♀. 7·5 mm. Head wider than long, rectangular, behind widely and shallowly emarginate and wider there than in front. The scape reaches the posterior third of the head. Otherwise like the ♂, mandibles included. Thorax somewhat narrower than the head. Epinotum with two short spines, but little longer than their basal width. Petiole, etc., as in the ♂. The whole head almost dull and longitudinally rugose as far as the occiput, marked with three brown longitudinal stripes. Sculpture, pilosity and colour otherwise like that of the ♂. Clypeus and mandibles rather yellowish-red. Wings pale yellowish, the nervures and stigma pale.

“♂. 4·8 mm. Mandibles quadridentate. Clypeus carinate, not emarginate. Head somewhat longer than wide. Epinotum unarmed. Colour, pilosity and sculpture as in the ♀, but the bands on the mesonotum and the wings as in the ♀. The yellow colour is a little brighter than in the ♀.

“Kalahari, between Kooa and Sekgoma, and between Kgokong and Kang (Schultze).”

Var. *GWAATIENSIS*, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 129, ♂, ♀, 1913.

“♂. 6·6 mm. Very similar to the type of the species, having almost exactly the same colour, size, and rectangular, parallel-sided

head. But the 2nd node is much narrower, only one and a-half times wider than long, having at the sides only two fairly short cones, whereas in the type of *Schultzei* it is twice as wide as long, and has spines at the sides, although these are shorter than in *spinulosa*."

♀. 2.4–2.6 mm. Almost identical with the type, slightly darker, with the mesonotal impression a little more accentuated.

This species is closely related to *spinulosa*, but differs from it in the ♀ as follows: The head is parallel-sided, not wider behind than in front, if anything a little wider in front than behind. The occipito-frontal sulcus is much deeper. The sculpture extends further back, reaching the middle of the head above, and well beyond the middle at the sides. The occipital emargination is deeper and more angular at the apex. The thorax is narrower; the posterior lateral angles of the pronotum are more prominent, since there is a fairly pronounced constriction of the sides between them and the mesonotum. The transverse torus on the mesonotum is thicker. The dorsum of the



FIG. 28.—*P. Schultzei*, Forel, var. *gwaaiensis*, Forel.

epinotum is longer and the teeth are closer together. The dorsal face of the first node is parallel-sided, not angular in the middle.

The ♀♀ of the two species are very much alike, but in *gwaaiensis* the scapes are more slender and longer, extending back as far as the middle of the pronotum, whereas in *spinulosa* they do not project beyond the occipital margin by more than one and a-half times the length of the eye. In addition, in *gwaaiensis* the frontal carinae are slightly arcuate and divergent, the head is narrower and convex behind, not straight or slightly emarginate as in *spinulosa*. The transverse impression of the mesonotum is also shallower, the first node of the petiole less high, the second node longer and distinctly longer than wide.

♀. 7.2 mm. (hitherto undescribed). Head longitudinally striate, the spaces between the striae closely and finely reticulate. A few strong rugae radiate outwards from the ocelli. There is a deep and shining occipital groove which reaches as far as the anterior ocellus. Posterior two-fifths of the mesonotum obliquely and sharply rugulose, the rest of the mesonotum and the scutellum shining and very

sparsely punctured. The epinotal spines are directed upwards and slightly backwards, acute, hardly as long as their basal width. The colour of the head is yellowish-red, without darker stripes, the anterior margin darker than the rest. Otherwise like the type of the species.

It differs from the ♀ of *spinulosa-nexa* by the much shorter thorax, and by the mesonotum, which is much more convex along the anterior margin. The metanotum does not project over the epinotum, and the dorsum of the latter is less deeply excavated. The dorsal edge of the 1st node is more feebly emarginate, and the dorsal face is as wide in front as behind, not narrower as in *spinulosa-nexa*. The 2nd node is narrower and the lateral teeth more obtuse, shorter and somewhat flattened. The colour is also quite different from that of *nexa*.

♂. 5 mm. Dirty ochreous yellow, the head black, the mesonotum yellowish-brown, with a V-shaped yellowish band in front. Legs, antennae and mandibles pale yellow. Head very closely and finely reticulate-punctate, with a few rugae superimposed and radiating from the ocelli. The latter are glassy yellow, large and very prominent. Mesonotum sculptured more finely than in the ♀. Eyes occupying the anterior half of the head, ovoid, wider in front than behind. Scutellum convex and gibbous behind. Dorsum of epinotum fairly oblique, distinctly longer than the declivity, and as long as it is wide. Second node of petiole widest behind, the sides moderately angulated at the posterior third. Flagellum densely pubescent, the scapes not extending back as far as the anterior ocellus. Seen from in front the head is trapezoidal, widest anteriorly. Other characters as in the type of the species.

S. Rhodesia, fairly plentiful on the Forest Sandstone and Kalahari Sand formations, but not occurring elsewhere as it is a distinctly areniphilous species. The nest is very distinctive and like that of the type-species; it may be seen all along the railway line from Nyamandhlovu to the Victoria Falls. The entrance, of exceptional width (from 1 to 2 in. in diameter), is surrounded by a wide but low-walled crater. The area enclosed therein is kept perfectly smooth and bare. As a rule, the entrance at about 4 or 5 in. from the surface leads into a circumconical space from the bottom of which galleries radiate outwards; the central cone itself is pierced by a vertical gallery which again leads into a second and lower circumconical chamber, similar to the upper one. (S.A.M., R.M., G.A. colls.; types of ♀ and ♂ in my collection.)

P. sculpturata, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 16, p. 897, ♀, 1866.

“♀. 9.5 mm. Head 3.8 mm. long, 2.8 mm. wide at its widest. Shining, testaceous red, the head ferruginous, abdomen fusco-ochraceous, legs reddish testaceous, mandibles castaneous, the anterior margin of the head and the masticatory margins of the mandibles blackish; abundantly clothed with a short, yellowish pilosity, which is slightly exerted on the legs. Head elongate quadrangular, deeply excised behind, a little wider in the middle than in front or behind, indistinctly impressed behind and below the eyes; mandibles strongly convex, shining, smooth, sparsely punctured with small piligerous punctures, with some short striae at the base and near the trenchant masticatory margin, obtusely bidentate in front. Clypeus with a longitudinal median carina and some short striae behind, emarginate in front; cheeks striate, coriaceous-punctate and rugulose; the frons



FIG. 29.—*P. sculpturata*, Mayr.

finely but closely striate, the frontal sulcus smooth; the vertex in the middle more finely and longitudinally striato-rugulose, at the sides finely coriaceous-punctate and rugulose, with large, scattered and shallow punctures; thorax finely rugulose and reticulate-punctate, strongly constricted between the scutellum and the epinotum; pronotum with a rounded tubercle on each side; scutellum distinct, epinotum with two erect spines, not long, shorter than the transversely rugose basal portion; petiole transversely rugose and coriaceous-rugulose, the peduncle of the 1st segment low, the node a little emarginate above, the 2nd segment transverse, with a subobtusate and conical spine on each side which is directed outwards but hardly curved backwards, furnished below anteriorly with a blunt denticle; abdomen finely coriaceous-rugulose and with some scanty piligerous punctures.

“Caffernland” (S. E. Africa?).

I have seen specimens of the ♀ from Pretoria and from Bothaville, O.F.S., which agree with the above description in greater part, but the colour is darker, especially of the abdomen, which is very dark brown,

with the basal third of the 1st segment reddish-brown and the apical margins of all the segments testaceous. The scutellum is more distinctly defined, and the 2nd node of the petiole is shorter and much wider than in any of the preceding species.

♂. 3-3.2 mm. Dark reddish-brown, the disc of the pronotum and the dorsum of the epinotum paler or more castaneous red, femora and tibiae reddish-yellow-brown, flagellum and tarsi yellowish-brown. A few long and exserted hairs occur on the body, shorter on the head than elsewhere; legs and antennae with a fairly abundant, long and exserted pubescence of a pale-yellowish colour. The frons and vertex are fairly smooth and shining, the rest of the head finely reticulate and longitudinally striate, the striae becoming weaker behind the eyes, hardly reaching as far as the posterior angles. Mandibles finely and longitudinally striate, with a few shallow punctures near the masticatory margin; the latter is armed with two large and acute teeth at the apex, and five or six smaller teeth behind. Pronotum sparsely and transversely striate in front, very superficially reticulate-rugulose and shining at the sides and behind, almost smooth, the rest of the thorax a little duller and closely reticulate. Nodes of petiole shallowly rugulose and slightly shining. Abdomen smooth and shining. Head, excluding the mandibles, as long as wide, widest in the middle, the sides fairly convex, the hind margin straight or only feebly concave. Eyes rather large, placed in the middle of the sides. Clypeus carinate, the anterior margin convex. Frontal area large. Frontal carinae subparallel, hardly extending back beyond the level of the anterior margin of the eyes. The scapes extend beyond the hind margin of the head by as much as the length of the 1st joint of the flagellum; the latter is twice as long as the 2nd joint. Promesonotal suture obsolete. Posterior lateral angles of pronotum prominent, slightly produced outwards, and, seen from the side, subdentiform. Mesonotum with a feeble transverse impression, the declivous face of the scutellar portion longer than the upper face. Meso-epinotal suture deep, the thorax fairly strongly constricted at this point. Dorsum of epinotum marginate at the sides, widening towards the apex, twice as long as wide. Epinotal teeth vertical, acute, a little longer than their basal width, half as long as the space between them: the declivity shorter than the dorsum. First segment of petiole two-thirds longer than high, the dorsal edge not high and barely emarginate, the dorsal face wider in front than behind; 2nd node with the sides produced into two very distinct cones, obtuse at the apex.

Bothaville, O.F.S. (Dr. H. H. Brauns); Pretoria (Lounsbury).

Var. AREOLATA, Forel.

Sitzb. k. Bayer Akad. Wissensch., p. 269, ♂, ♀, 1911.

“♂. 8 mm. Head 3 mm. long and 2.6–2.7 mm. wide. Clypeus barely emarginate, indistinctly carinate. Sides of head straighter than in the type-species. Head very little narrowed behind; a large, superficial network occurs over more than the posterior half of the head, in addition to the fine reticulate-punctate sculpture. Otherwise like the type-species.

“♀. 2.8 mm. Head somewhat narrowed posteriorly, with a more distinct posterior margin and less convex sides than in the type-species, also very distinctly longer than wide.

“Bothaville, O.F.S. (Dr. H. Brauns).”

Race BERTHOUDI, Forel.

Mitth. Schweiz. Ent. Ges., vol. 9, p. 89, ♂, ♀, 1894.

“♂. 5.3–6 mm. Head, excluding the mandibles, 2.7 mm. long and 2.1 mm. wide, a little wider in front than behind, nearly parallel-sided. Mandibles smooth, shining, very sparsely punctured, striate externally at the base. Clypeus very short, carinate, widely emarginate in the middle. Frontal carinae short, very divergent, ending in front of the anterior fourth of the head. Eyes small. Directed outwards, the very short scape hardly extends beyond the anterior corner of the head. Head deeply and narrowly excised behind, the excision being continued into the occipito-frontal sulcus. Pronotum with two blunt bosses above and below. Mesonotum with a weak transverse torus. Epinotum not marginate, armed with two long, thin, nearly vertical and strongly divergent spines, which are nearly as long as the dorsum of the epinotum. First segment of the petiole with a long peduncle, the node feebly emarginate above. Second segment wider than long, produced at the sides into two very long teeth or blunt spines. Legs fairly long. Head dull or with a slight gloss, very finely reticulate-punctate, also more coarsely striate longitudinally over the anterior two-thirds, the posterior third closely and transversely striate, underneath only reticulate and shining. Thorax slightly shining, finely reticulate and irregularly rugose, transversely so in front; epinotum reticulate-punctate only. Petiole and 1st abdominal segment reticulate, the rest of the abdomen smooth. Legs smooth and sparsely punctured. Pilosity moderately abundant except on the head and legs, very short, oblique, yellowish, and not quite decumbent. Tibiae and scapes without exserted hairs, the latter sparse on the body.

Dark reddish-brown; abdomen dark brown, legs and antennae brownish-red.

“♀. 3.2 mm. Head quadrangular, as wide as long. Eyes fairly large, placed at the anterior third. The scape extends beyond the hind margin of the head by one-fifth of its length. Pronotum with two small but quite distinct bosses above (*posterior lateral angles*). Mesonotum very distinctly impressed transversely. Dorsum of the epinotum rectangular, ending in two strong triangular spines. Second segment of petiole wider than long, produced at the sides into blunt cones. Clypeus carinate. Fairly closely reticulate punctate and almost dull. Abdomen reticulate and moderately shining. A few longitudinal striae on the cheeks and frons. Mandibles sharply striate. Pilosity as in the ♂. Dark brown, mandibles, antennae and legs yellowish-brown. Valdezia, Transvaal (Rev. P. Berthoud).”

Race ZAMBESIANA, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 133, ♂, ♀, 1913.

♂. 6 mm. Head dark reddish-brown, thorax and abdomen very dark brown or almost black, legs and antennae ferruginous. The whole body abundantly clothed with a long, yellowish and decumbent pubescence, shorter on the legs and antennae. Erect pilosity almost absent. Fairly dull, only the occipital lobes and the abdomen having a slight gloss. The whole head, excepting the occipital lobes, finely and longitudinally striato-rugose, the spaces between reticulate-punctate and partly rugulose. Occipital lobes fairly closely but not coarsely punctured. Mandibles very convex externally, strongly punctured, some of the punctures coalescing to form longitudinal striae. Thorax with a fine and somewhat superficial fundamental reticulation, which is strongest on the epinotum; there are a few irregular rugae in addition, more or less transverse on the promesonotum. Nodes rugulose. Abdomen very finely punctured, rugulose at the base. Head quadrate, parallel-sided as far as the occipital lobes, the outer margins of which curve slightly inwards, one-eighth longer than wide, deeply, angularly and widely excised behind. Clypeus carinate, the anterior margin straight. Frontal carinae strongly divergent, not extending beyond the anterior fourth of the head. Eyes placed at the anterior fourth. Scapes not reaching the middle of the head. Pro-mesonotal suture fairly distinct; the posterior lateral angles of the pronotum considerably rounded. Mesonotum hardly depressed in the middle, its scutellar portion vertical behind, and bearing a transverse torus above. Dorsum of

epinotum marginate at the sides, wider than long, moderately excavated, shorter than the declivity; epinotal spines divergent, subvertical, longer than their basal width, two-thirds as long as the space between them. Dorsal face of 1st node nearly one and a-half times wider than long, feebly emarginate in front. Second node twice as wide as long, longer and less wide than in the type-species, the sides produced into two fairly acute spines, strongly curved backwards.

♂. 2.4 mm. Blackish-brown or black, antennae, mandibles and tarsi ferruginous, tibiae and femora dark brown, the articulations reddish. Erect pilosity very scanty, the legs and antenna moderately pubescent. Head and thorax densely reticulate-punctate and dull. Nodes very superficially reticulate, legs and abdomen smooth and shining. A few longitudinal striae on the cheeks and vertex. Mandibles striate and sparsely punctate. Head as long as wide, the sides convex, the posterior margin straight, the posterior angles narrowly rounded. Clypeus carinate, the anterior margin straight. Eyes convex, rather large, placed in the middle of the sides. Frontal carinae slightly divergent posteriorly. Pro-mesonotum strongly convex in all directions, the mesonotum with a transverse impression and a tolerably distinct scutellum. Meso-epinotal suture deep. Dorsum of epinotum one and a-half times longer than wide, flat. Epinotal teeth subvertical, slightly divergent, acute, one-third as long as the space between them. Dorsal edge of 1st node feebly emarginate; 2nd node a little wider than long, the sides obtusely conical.

Victoria Falls and Shiloh, S. Rhodesia. (S.A.M., R.M., G.A. colls.)

P. LIENGMEI, Forel. (Plate VI, fig. 71.)

Mitth. Schweiz. Ent. Ges., vol. 9, p. 93, ♂, 1894.

Ann. Soc. Ent. Belg., vol. 57, p. 134, ♀, 1913.

♀. 7-8.5 mm. Of a very dark reddish-brown, the abdomen blackish-brown, legs and antennae ferruginous. Head, thorax and basal third of abdomen dull, the rest of the abdomen and the legs smooth and shining. Pilosity reddish-yellow, fairly sparse, the pubescence also sparse. Head strongly rugoso-striate; the striae are longitudinal on the anterior half or three-fifths but divergent posteriorly. On the posterior half or two-fifths the striae are much more oblique or almost transverse, and also closer and finer. The spaces between the striae closely and finely reticulate. Thorax and nodes reticulate-punctate, less closely on the sides and on the dorsum of the epinotum than on

the pro-mesonotum, very finely on the nodes. The latter and the pronotum are also sparsely rugose transversely; the sides of the epinotum have three or four very strong and more or less concentric striae. Basal third of abdomen microscopically alutaceous and longitudinally aciculate; the rest of the abdomen smooth, with shallow piligerous punctures. Head a little longer than wide, slightly narrowed in front, widest across the posterior fourth, the sides nearly straight. The cheeks, behind and between the eyes and vertex, feebly and obliquely depressed. The posterior margin widely and deeply excised, the apex of the excision subangular. Mandibles smooth, shining, sparsely and finely punctured. Eyes convex, placed in the anterior fourth of the sides. Clypeus carinate, shallowly emarginate in front. The scapes extend a little beyond the middle of the head. Occipito-frontal sulcus very deep and transversely striate in its posterior half. Posterior lateral angles of pronotum large and prominent. Pro-mesonotal suture more or less apparent. Mesonotum shallowly impressed transversely in

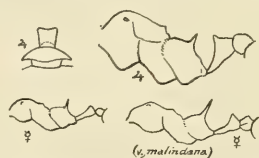


FIG. 30.—*P. Liengmei*, Forel.

front of the scutellar region, the latter surmounted by a narrow transverse torus. Meso-epinotal suture wide and deep. Dorsum of epinotum feebly margined at the sides, as long as wide. Epinotal spines distinctly long, acute, subvertical, divergent, longer than the interval between their bases and as long as, or a little longer than, the dorsum of the epinotum. Dorsal edge of the 1st node very feebly emarginate, the dorsal face a little wider in front than behind and about as long as wide. Second node twice as wide as long, the anterior margin convex, the sides produced into two cones which are curved backwards.

♀. 3.8–4 mm. Dark brown, abdomen nearly black, antennae and legs yellowish-brown, the tarsi yellower, mandibles brownish-red. Pubescence and pilosity scanty. Legs and apical two-thirds of the abdomen moderately shining, the rest of the body dull. Head and thorax closely and strongly reticulate-punctate, appearing granulate under a low magnification. Nodes finely reticulate. Base of abdomen very finely areolate or reticulate, and also longitudinally aciculate. The head has in addition a few longitudinal rugae at the sides in

front of the eyes. Mandibles moderately shining, striate, and with a row of large punctures parallel to the masticatory margin. Head, excluding the mandibles, fairly round, the posterior margin straight, the posterior angles widely rounded. Eyes large, convex and prominent, placed at the middle of the sides. Clypeus feebly carinate, the frontal area large and well defined. Frontal carinae parallel, extending back a little beyond the first third of the head. Scares extending beyond the hind margin by a length equal to twice their apical width. Pronotum convex in front and above, the posterior lateral angles produced into two rather large cones; these are more easily seen in profile. Mesonotum with a feeble transverse impression. Meso-epinotal suture deep. Dorsum of epinotum nearly twice as long as wide, submargined at the sides. Epinotal spines very long, acute, subvertical, feebly divergent, not quite as long as the dorsum of the epinotum. First joint of petiole four-fifths longer than high, the dorsal edge obtuse. Second node not much wider than long, the sides angular. Legs long.

♀. 9.8 mm. (hitherto undescribed). Pilosity and pubescence as in the ♂. Colour darker than in the ♂. The sculpture of the head like that of the ♂, but much stronger. The vertex strongly and longitudinally striate, the spaces between the striae nearly smooth and very shining. Head obliquely truncate behind the ocelli and transversely striate. The fundamental sculpture of the mesonotum is reticulate-rugulose, with some fairly close longitudinal rugae superimposed; these converge inwards and meet in the middle; a small anterior median area smooth and shining. The anterior half of the mesonotum is also very sparsely and shallowly punctured. Scutellum smooth, shining, coarsely and sparsely punctured. Paraptera longitudinally rugose. Epinotum and nodes transversely rugose, the abdomen sculptured more strongly than in the ♂. Head, excluding the mandibles, as long as wide behind, widest behind, the posterior half of the sides convex, the anterior half concave. The eyes placed at the anterior third, very prominent. Clypeus as in the ♂. Posterior margin of the head shallowly concave, the posterior angles only narrowly rounded. Head hardly wider than the mesonotum, the metanotum slightly projecting. The dorsum and declivity of the epinotum form a single and nearly vertical plane. Epinotal spines acute, horizontal, divergent, about as long as their basal width and as long as the space between them. Petiole and abdomen as in the ♂, but larger. Wings yellowish, nervures brownish-yellow, stigma brown.

Bulawayo and Victoria Falls, not common. The nest is usually placed under stones. (S.A.M., R.M., G.A. colls.; type of ♀ in my collection.)

Var. *SHINSHENDENSIS*, Forel.

Rev. Zool. Afric., vol. 2, p. 327, ♂, 1913.

“ ♂. 4·4·2 mm. A little larger than the type of the species. Black, legs and mandibles brown. The sculpture is coarser than in the type, even on the abdomen. Otherwise identical.

“ Shinshenda, Katanga (Dr. Bequaert).”

I have some specimens from Bembesi, S. Rhodesia, which appear to agree with this variety. The superimposed rugae on the head are stronger and more abundant. The thorax is also coarsely and irregularly rugose. The epinotal spines are as long as, or a little longer than the dorsum of the epinotum.

♂. 8 mm. (hitherto undescribed). The sculpture is like that of the type of the species, but stronger everywhere. The head is more convex above transversely, the occipital sulcus is less deep, and the occipital emargination shallower, hardly more than half as deep as in the type-species. The epinotal spines are a little longer, stouter and somewhat compressed (blade-shaped). Otherwise like the type of the species.

Bembesi, S. Rhodesia. Forming populous nests in sandy soil. A very pugnacious insect. (S.A.M., R.M., G.A. colls.; type of ♂ in my collection.)

Var. *MALINDANA*, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 135, ♂, 1913.

♂. 4·5-5·2 mm. Black, mandibles, scapes and legs dark-brown, tarsi and flagellum ferruginous. Sculpture like that of *shinshendensis*, but the posterior half of the head is widely reticulate-rugose. The base of the abdomen finely areolate and aciculate, but more strongly so than in the type of the species. Posterior margin of the head shallowly concave. Posterior lateral angles of pronotum strong, sub-dentiform. Epinotal spines very long and acute, longer than the dorsum of the epinotum. Second node of petiole with a conical projection on each side, a little less obtuse than in *shinshendensis*.

Malindi, S. Rhodesia. (R.M., G.A. colls.)

Race *MICRARTIFEX*, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 215, ♂, 1913.

♂. 6·5-7·2 mm. Colour similar to that of the type-species, but darker. Sculpture also similar, but stronger, especially on the head, where the transverse rugae on the posterior part are coarser and wider

apart. The occipital emargination is narrower, a little deeper, and more angular at the apex. The inner sides of the occipital lobes are distinctly convex (straight, or almost so in the type of the species). Occipito-frontal sulcus deeper and wider. The head is as wide behind as in front. The epinotal spines are less divergent than in the type of the species. The 2nd node of the petiole has a long spine on each side, longer in proportion to the rest of the node than in the type of the species. Occasionally the head is much paler than the rest of the body, being of a bright castaneous red.

♂. 3-3.4 mm. Black, tarsi and flagellum ferruginous, scapes and legs dark brown. Middle of the frons and vertex shining and almost smooth, the rest of the head more finely and superficially reticulate than in the type of the species. Thorax sharply reticulate-punctate and dull. Nodes and base of abdomen more strongly reticulate. Epinotal spines shorter than in the type, hardly two-thirds as long as the dorsum of the epinotum. Nodes as in the type of the species.

Bulawayo. (S.A.M., R.M., G.A. colls.)

P. EXCELLENS, Mayr, race *RHODESIANA*, Forel. (Plate VI, fig. 69.)

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 744, ♀, 1862.

(Race) Ann. Soc. Ent. Belg., vol. 57, p. 131, ♀, 1913.

♀. 7 mm. Piceous, the posterior half of the head sometimes more or less dark, castaneous; flagellum and tarsi ferruginous, scapes, femora and tibiae dark brown, the latter paler at base and apex. Pubescence on the head almost decumbent, longest on the legs and abdomen, more exerted on the legs than elsewhere. Pilosity scanty, yellowish, very oblique on the head, more or less exerted on the thorax. Anterior half of the head longitudinally striate, the spaces between the striae shining and very superficially rugulose; posterior half of the head smooth, shining, shallowly and sparsely punctured, here and there also very feebly rugulose. Thorax fairly shining, the pro-mesonotum feebly and irregularly rugulose transversely, with a few stronger rugae at the sides. Epinotum more strongly sculptured, especially at the sides, transversely rugoso-striate. Sides of pro- and mesothorax irregularly rugose. Nodes transversely rugulose. Abdomen smooth and shining, the extreme base faintly aciculate. Legs smooth and shining. Head, excluding the mandibles, not quite one-fifth longer than wide, parallel-sided, deeply excised behind, the excision angular at the apex. The sides of the head, between the vertex and the eyes and behind the latter, have a slight oblique concavity. Occipito-frontal sulcus fairly deep posteriorly, the anterior half shallow.

Frontal carinae short and strongly divergent. Scapes short, extending beyond the lateral margins by about twice their apical width. Eyes small, placed a little in front of the anterior third. Mandibles stout, very convex externally, smooth and shining. Clypeus feebly carinate, shallowly emarginate in front. Posterior lateral angles of pronotum very rounded and inconspicuous. Pro-mesonotal suture indicated by a thin raised line. Scutellum fairly well defined, bituberculate. Metanotum fairly distinct but short. Meta-epinotal suture rather shallow. Dorsum of epinotum flat, submarginate at the sides, wider than long; epinotal spines subvertical, divergent, about two-thirds the length of the space between their bases. Declivity of epinotum longer than its dorsum. Dorsal face of the 1st node a little wider than long, the dorsal edge shallowly emarginate. Second node, including the lateral spines, three times wider than long; the spines are obtuse at the apex and usually longer than their basal width, more or less curved backwards.

♀. 3 mm. Piceous or black, legs and antennae as in the ♂. The pilosity and pubescence very scanty. Anterior half of the head, but excluding the frons, reticulate and longitudinally striate; the rest of the head smooth and very shining. Meso- and epithorax and sides of the 1st segment of the petiole reticulate and faintly shining, the rest of the body smooth and shining. Head as long as wide, the sides feebly convex, the hind margin straight. Clypeus carinate. Frontal carinae parallel. Eyes placed in the middle of the sides. Mandibles longitudinally striate. The scape extends back beyond the occipital margin by about twice its apical width. Posterior lateral angles of the pronotum distinct but small. Mesonotum with a moderately deep transverse impression. Meso-epinotal suture deep. Dorsum of epinotum margined at the sides, one and a-half times longer than wide. Epinotal spines short, triangular, subvertical, hardly two-thirds as long as the space between them. Dorsal edge of the 1st node rounded, not trenchant; 2nd node with the sides produced into strong conical teeth, the anterior margin strongly convex.

♂. 6.2 mm. (hitherto undescribed). Thorax, legs, antennae and mandibles pale brownish-ochreous, head yellowish-brown, apex of scutellum and greater part of the metanotum brownish, the mesonotum with a median and two smaller lateral longitudinal bands more darkly coloured than the rest of the thorax, abdomen yellowish-brown. Pilosity moderately abundant, yellowish, and not long, longest on the back of the head and on the petiole. Head dull, very finely reticulate-punctate, also finely striate between the eyes and the insertion of the scape. Epinotum and nodes subopaque and finely rugulose, metanotum transversely striate, the rest of the body smooth, shining, and nearly

impunctate. Head triangular, widest in front. The eyes occupy the anterior half of the sides. Ocelli very large, pearly white, prominent. Scapes hardly longer than the space between the posterior ocelli; 1st joint of flagellum a little longer than wide, widest apically, but not globose. Clypeus with a prominent tubercle in the middle. Mandibles triangular, shining, feebly striato-punctate, armed with 5 or 6 sharp teeth. Dorsum of epinotum twice as wide as long, feebly bituberculate, a little longer than the subvertical declivity. Peduncle of the 1st segment of the petiole as long as the node, widened on each side near the base into a small lobe; the node low. Second node with fairly sharp lateral angles, sometimes almost dentiform. Wings yellowish, nervures ochreous, the stigma brown.

Bulawayo, not common. (S.A.M., R.M., G.A. colls.; type of ♂ in my collection.)

P. AKERMANI, n. sp.

A rather small species of the *sculpturata* group, but also resembling the *capensis* group in the relatively small size of the ♀ ♀.

♀. 4.6–4.9 mm. Dark castaneous brown, the posterior fourth of the head, the thorax and petiole with a redder tinge, abdomen piceous, scapes, tibiae and tarsi raw-umber brown, femora brown but paler at the bases and apices. Pilosity yellowish, oblique, fairly long and moderately abundant; pubescence inconspicuous except on the tarsi. Head and thorax dull, abdomen and legs shining.

Head closely and evenly reticulate-punctate, fairly strongly and longitudinally rugose at the sides between the eyes and vertex, the latter only longitudinally striate as far as the posterior third of the head and with the fundamental reticulation absent between the striae, the occipital lobes and lower surface of the head smooth, shining and sparsely punctured. Mandibles shining, striate at the base, sparsely punctured with deep and large punctures. Clypeus strongly carinate, its anterior margin arcuately emarginate in the middle. Pronotum finely and transversely rugulose, mesonotum rugulose-reticulate in front, reticulate-punctate at the sides and behind. Epinotum and petiole reticulate-punctate, the petiole very finely so. Abdomen very finely striate longitudinally at the base medially.

Head, excluding the mandibles, nearly one-third longer than wide, barely wider behind than in front, the sides straight, the occipital emargination angular, wide and deep, the occipital lobes rounded behind. Occipital sulcus deep. Sides of the head behind the eyes with an oblique and shallow depression. The scapes extend back as far as the middle of the head.

Lateral angles of the pro-mesonotum obtuse and not prominent, pro-mesonotal suture obsolete; mesonotum with a feeble transverse torus, not depressed in front of the same, vertical behind it. Dorsum of epinotum as long as wide between the spines, the latter relatively shorter than in our other species of the *sculpturata* group, erect, triangular, as high as they are wide at the base. Declivity of epinotum subvertical, a little longer than its dorsum. Petiole shaped exactly like that of *Liengmei*, race *micrartifex*.

♂. 2.6 mm. Head piceous, excepting the anterior margin and the clypeus, which are yellowish-brown. Thorax reddish-brown (burnt umber), abdomen dark brown, antennae, femora and tibiae brown, bases and apices of the femora, tarsi and mandibles brownish-ochreous. Pilosity yellowish, oblique, fairly scanty, but more abundant than in *micrartifex* Forel. Mandibles, clypeus, legs and abdomen fairly shining, the rest dull. Head and thorax closely and evenly reticulate-punctate, the pronotum with two or three median longitudinal striae on the disc, and finely and longitudinally aciculate on the posterior half of the sides; petiole superficially reticulate, abdomen smooth.

Head oval, one-fifth longer than wide, the sides moderately convex. the posterior margin straight. Mandibles sparsely but very finely punctured and with a few longitudinal aciculations, with seven teeth. Anterior margin of the clypeus convex, finely but distinctly carinate in the middle. Frontal area triangular, large and well defined. Eyes placed in the middle of the sides of the head. The scapes extend beyond the posterior margin by one-seventh of their length. Frontal carinae nearly parallel. Pronotum strongly convex, with barely defined posterior lateral angles. Pro-mesonotal suture arcuate, indicated by a fine raised line. Mesonotum transversely and shallowly impressed in front of the middle. Dorsum of epinotum horizontal and flat, one and a-half times longer than wide, the spines acute, short, not longer than their basal width, directed vertically upwards. Node of 1st joint of the petiole obtuse above, hardly as long as wide; 2nd joint of petiole as long as wide, its anterior margin convex, obtusely angulated in the middle of the sides, but not dentiform or spinose.

Pietermaritzburg (Dr. C. Akerman), ex. Natal Museum coll. (Type in my collection.)

P. CRASSINODA, Emery.

Ann. Soc. Ent. France, vol. 63, p. 32, ♀, 1895.

“♀. Piceous; mouth and coxae dull ferruginous; antennae, tibiae and tarsi rufescent, sparsely pilose; legs with a long and very oblique

pubescence. Head subquadrate, hardly narrowed in front; occiput not very deeply excised, the occipito-frontal sulcus shallow; (*head*) opaque in front, punctulate and longitudinally rugose; behind very shining and with large scattered punctures; clypeus striate, nitidulous; mandibles shining, striate at the base. Thorax dull, punctulate and transversely rugose, the pronotum gibbous on each side; mesonotum with a distinct scutellum and a transverse torus; epinotal spines erect, a little shorter than the dorsum of the epinotum. First segment of petiole with a squamiform lobe (= *the nodal portion*) and emarginate above; 2nd segment more than twice as wide as the 1st, not much wider than long, the anterior margin arcuate, the sides obtusely angulate, densely punctulate, dull; the first abdominal segment punctulate at the base, 7 mm. long, the head without the mandibles 2.6 mm. \times 2.4 mm.

“♀. Piceous, mouth, antennae, articulations of the legs, tibiae and tarsi rufescent, dull, very densely punctured, the abdomen shining, except at the base; head ovate, cheeks longitudinally rugose, mandibles striate, pro- and mesonotum without prominences; dorsum of epinotum sulcate in the middle, the epinotal teeth triangular and obtuse, 2nd segment of petiole three times wider than the 1st, subglobose, the sides obtusely angulated, 4 mm.

“Makapan; Verulam, Natal (Weitzaecker).”

PHEIDOLE CRASSINODA, Emery, var. PLUTO, n. v. ✓

♀. Mandibles deep castaneous brown, antennae and tarsi yellowish-red, all the rest of the body black. Apart from the colour, this variety also differs from the type of the species as follows: The sculpture is much stronger everywhere. The head, excepting the median area of the clypeus and the mandibles, is dull all over, the reticulate and fundamental sculpture extending over the occipital lobes. The thorax is much more coarsely rugose and the sutures are deeper, also the transverse impression on the mesonotum. The basal third of the abdomen is dull, very sharply reticulate. The scanty punctures on the abdomen are also deeper and larger. Otherwise like the type of the species.

♀. 4.1 mm. Femora and coxae piceous; tibiae, scapes and basal half of the flagellum very dark brown; mandibles, tarsi and apical half of the flagellum ferruginous, the rest of the body black. Legs and apical half of the abdomen smooth and shining, the rest of the body dull, very strongly reticulate-punctate, and much more strongly sculptured than in the type of the species, which it otherwise resembles.

Amatongas Forest, Portuguese E.A. (S.A.M., R.M., G.A. colls. Types in my collection.)

Race *RUSPOLII*, Emery. (Plate VI, figs. 63-66.)

Ann. Mus. Civ. Gen., vol. 38, p. 597, \mathcal{U} , \mathcal{F} , 1897.

\mathcal{U} . 8 mm. Piceous or very dark reddish-brown; femora and tibiae a little paler or more reddish, tarsi and antennae ferruginous. Pubescence almost obsolete on the body, yellowish, coarse, oblique and fairly long on the legs and antennae. Pilosity short and yellowish, very scanty, especially on the thorax; some of the hairs on the head and abdomen are closely adpressed, the rest oblique. Anterior half of the head with a slight gloss, the clypeus and space between the frontal carinae smooth and more shining, closely reticulate-punctate and longitudinally rugoso-striate, the striae fairly wide apart. Posterior half of the head very smooth and shining, with a few large punctures. Thorax, upper faces of the nodes and the extreme base of the abdomen superficially and finely reticulate, and with a few feeble transverse rugae here and there; abdomen smooth and shining. Head, excluding the mandibles, as long as wide, widest in the middle, distinctly narrowed in front, not much so behind, the sides convex, the posterior margin not deeply excised, the apex of the excision and the occipital lobes rounded. Occipito-frontal sulcus shallow. The head is highest in the middle, and has a very shallow depression on each side above and behind the eyes. Clypeus feebly carinate, widely and fairly deeply emarginate in front. Mandibles smooth, shining, very finely and sparsely punctured; a row of larger punctures borders the masticatory margin. Scapes extend a little beyond the middle of the head. Eyes small, placed at the anterior third of the sides. Posterior lateral angles of the pronotum moderately acute and prominent. Promesonotal suture distinctly defined. Mesonotum with a transverse median impression, and a transverse torus above the scutellum. Dorsum of epinotum horizontal and flat, one and three-quarter times longer than wide, as long as the declivity; epinotal spines acute, subvertical, divergent, very little longer than their basal width. Posterior dorsal face of the 1st node as wide as long, the dorsal edge barely emarginate; 2nd node two and a-third times wider than long, the anterior margin semicircular, the sides moderately angular, but not spinose or dentiform. Abdomen subcircular, the base transverse.

\mathcal{F} . 4.4-4.7 mm. Piceous; mandibles, flagellum, tarsi and articulations of the legs ferruginous. Pilosity and pubescence as in the \mathcal{U} .

Head, thorax and nodes dull, closely and finely reticulate-punctate (granulate), the nodes more shallowly so than the rest of the body. Abdomen and legs smooth and shining. Mandibles nitidulous, feebly striate. Head, excluding the mandibles, one-sixth longer than wide, oval. Eyes convex, fairly large, placed in the middle of the sides. Frontal carinae parallel; frontal area depressed and shining. Clypeus with a feeble median carina, the anterior margin entire and convex. The pronotum is rather long, very little shorter than wide, the posterior angles feeble. Mesonotum with a wide transverse impression; in most specimens the anterior margin of the mesonotum is slightly raised in the middle. Meso-epinotal suture deep. Dorsum of epinotum much longer than wide, a little longer than the oblique declivity, longitudinally sulcate in the middle. Epinotal teeth acute, vertical, very small, and hardly longer than their basal width. Dorsal edge of 1st node rounded and thick; 2nd node subconical or hemispherical, widest at the posterior fourth, behind which point it is rather abruptly contracted, but without forming sharp lateral angles. Abdomen oblong. Legs long, the femora a little swollen.

♀. 10.5 mm. (hitherto undescribed). Black, the head sometimes paler or piceous, the mandibles dark castaneous brown, the flagellum and tarsi ferruginous. Pilosity and pubescence as in the ♀. Head dull, the sides closely reticulate-punctate and with large longitudinal rugae superimposed, the vertex longitudinally striato-rugose, the spaces between the striae rugulose. The occipital groove is distinctly defined and transversely ribbed, or clathrate, ending at the anterior ocellus. Mesonotum rugulose, with a shallow and longitudinal rugosity superimposed; a small anterior median area and the borders of the parapsidal sutures smooth and shining. Paraptera longitudinally rugose. Scutellum and metanotum finely and transversely rugulose, the former slightly shining in the middle. Epinotum shining, the sides sparsely and coarsely rugose, the declivity finely and superficially reticulate. Nodes dull, reticulate-punctate and rugose; the rugae on the 2nd node transverse. Basal fourth of 1st abdominal segment dull and reticulate, the extreme base with a few short rugae, the rest of the abdomen smooth and shining. Head, excluding the mandibles, about one-seventh wider than long, widest behind, the sides convergent anteriorly, the posterior margin concave. Eyes placed in front of the middle of the sides. Clypeus as in the ♀. Mandibles feebly striate but more strongly punctured than in the ♀. The scapes extend back as far as the posterior ocelli. Head barely wider than the mesonotum. The latter almost one-third wider than long. Dorsum of epinotum obsolete between the teeth, the declivity

subvertical; epinotal teeth horizontal, wide at the base, triangular and as long as wide at the base. Second node two and a-quarter times wider than long, widest in the middle, the sides bluntly angular, the anterior margin convex, but not semicircular as in the ♀. Abdomen half as long again as wide. Wings yellowish, nervures ochreous, stigma yellowish-brown.

♂. 7.3 mm. (hitherto undescribed). Reddish-brown yellow (raw umber), tarsi dark ochreous, the middle of the femora brown, antennae pale ochreous, head brown, clypeus and mandibles brownish-yellow. The mesonotum has three longitudinal and sharply-defined dark-brown bands, the median one ending before the middle. Pilosity yellowish, fine, oblique, fairly abundant on the thorax and nodes, sparse elsewhere. Legs and antennae pubescent. Head dull, very finely reticulate, with a fine rugosity superimposed, the rugae radiating outwards from the ocellar region. Mesonotum longitudinally strigose, also sparsely and very shallowly punctured. Scutellum transversely rugulose. Epinotum shallowly reticulate, the sides striate above, the striae becoming stronger and more or less concentric below. Nodes microscopically reticulate and sparsely striate. Thorax slightly shining, more especially the mesonotum and base of the scutellum. Nodes dull. Abdomen smooth and shining.

Head triangular-trapezoidal, widest in front, the posterior margin feebly convex and somewhat produced at the lateral angles. The eyes occupy a little less than the anterior half of the sides. Clypeus subtuberculate or gibbous in the middle. Mandibles with one large apical tooth and three smaller teeth behind. Scapes shorter than the space between the posterior ocelli; 1st joint of the flagellum subglobose, very little longer than wide. Thorax much wider than the head; scutellum convex above, higher than the mesonotum. Dorsum of epinotum with a feeble elongate ridge on each side. First node of petiole as long as wide, the anterior face convex from side to side, the anterior margin rounded; 2nd node campaniform, widest behind, a trifle wider than long. Abdomen large, ovate, narrowed towards the apex, the 1st segment nearly as long as the remaining segments taken together. Wings as in the ♀.

This is a common species near Bulawayo, and is fond of making its nest near houses and in gardens. There are several entrances to the nest, surrounded by large heaps of excavated soil. It is partly graminivorous and collects the seeds of a variety of grasses. (S.A.M., R.M., G.A. colls.)

The following species, being unknown to me in nature, have not been included in the analytical key:

P. ASPERA, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 746, ♀, 1862.

Reise der Novara, Zool. II, Formicid., p. 97, ♀, ♂, 1865.

“♀. 5 mm. Yellowish-brown, the head brown and darkest, the thorax red or yellowish-brown, the flagellum brownish-yellow. The outstanding pilosity is yellow and fairly abundant, that of the legs dense and nearly decumbent. Mandibles longitudinally striate, the apical half sparsely and coarsely punctured, smooth and shining between the punctures. Head dull, the anterior half longitudinally striate, the cheeks rather rugose. The posterior half of the head, as far as the posterior angles, is obliquely and finely rugose and also superficially reticulate-punctate. Clypeus smooth in the middle, shining, fairly sharply carinate, the anterior margin entire. Pronotum more or less transversely rugose, widened on each side behind into a hump. Mesonotum with a transverse torus in the middle, which is angular on both sides. The epinotum is transversely rugose; the epinotal teeth divergent, directed upwards, not acute and not long. The sides of the thorax are sharply reticulate-punctate and somewhat striate. Petiole finely rugose. The 1st node, seen from behind, quadrate, its dorsal edge emarginate; the 2nd node with dentiform dilated sides. Abdomen smooth and shining.

“♀. 3 mm. Head blackish-brown, thorax reddish-brown, petiole and abdomen yellowish-brown, mandibles and flagellum brown-yellow, the legs brownish-yellow or yellowish-brown. Brighter specimens have the head and thorax reddish-brown, and the rest more or less yellowish-brown. The pilosity is fairly abundant. Mandibles longitudinally striate at the base, smooth at the apex and sparsely punctured. Clypeus feebly and longitudinally striate, smooth in the middle, carinate, its anterior margin entire. Vertex, between the frontal area and the frontal carinae, longitudinally rugose, the middle of the head more finely rugose or almost smooth and shining; sides of the head finely rugose. Pronotum shining and almost smooth, its posterior lateral angles feeble. The mesonotum has a feeble transverse torus, and like the epinotum, is reticulate-punctate; epinotal teeth acute, erect and fairly short. First node of petiole not emarginate above, reticulate-punctate and also sparsely rugose lengthwise; 2nd node shining, nearly smooth, not dilated at the sides. Abdomen smooth and shining. Cape of Good Hope.”

I am unable to place this species in any of my groups, as the shape of the head is not stated.

P. CAFFRA, Emery.

Ann. Soc. Ent. France, vol. 63, p. 33, 4, 1895.

"4. 4.5 mm.; head, 1.7 mm. \times 1.6 mm. Ferruginous, dull, abdomen piceous and shining. Head depressed behind, narrowly and deeply excised, very closely punctate above, dull, the occipital margin shining, the anterior two-thirds evenly and longitudinally rugose; the frontal carinae prolonged backwards, antennal scrobes as long as the scapes; clypeus with a short carina, barely striate, excised in the middle; mandibles sparsely punctured, striate at the base externally. Thorax transversely rugulose, the pronotum indistinctly bigibbose, the mesonotum with a transverse torus, the epinotum longitudinally grooved above, the spines fairly long, not very acute at the apex. First node of petiole emarginate above, the 2nd node wider, transverse, the sides obtusely conical. Legs shining, with oblique pubescence.

"Hamman's Kraal (Simon)."

"— On a number of points this form agrees fairly well with the description of *P. aspera* (Mayr), which I have not seen. It differs markedly from it by the emarginate clypeus. Mayr does not state that in his species the head is depressed behind, nor that the frontal carinae are prolonged backwards—characters which separate *caffra* from most of the African species of *Pheidole* and unite it with certain Indian forms such as *latinoda*, *rhombinoda*, *Feai*, etc. The head of *caffra* is barely longer than wide, its sides fairly parallel over the anterior two-thirds; further back the sides converge a little; the large occipital lobes are separated by a deep emargination. Seen from the side, the head appears distinctly depressed in its posterior third, the profile of which is oblique. On the median line, which is marked by a distinct groove, there is a wide impression, recognisable only in a certain light. The sculpture of the head consists of a fundamental reticulate puncturation, over which are imposed some trenchant rugae, very regular and longitudinal on the frons, less regular, thicker and anastomosed on the sides; these rugae extend as far as the frontal carinae, *i. e.* as far as the posterior fourth of the head. The scrobes are as long as the scape and are formed by a space between two rugae, wider than the others, one of which is the prolongation of the frontal carinae. On the occiput the punctures are intermixed with rugae and large piligerous foveae. The whole thorax is finely punctured and transversely rugulose. Petiole with piligerous foveae only; abdomen shining, very finely punctulate, more strongly so at the base, which is dull; in addition, it has some elongate piligerous punctures. The legs

have a long, oblique and decumbent pubescence, but no erect pilosity."

As far as one can judge from the above description, this species should be placed in the *Punctulata* group, and appears to stand nearest to *rotundata*, in which the head is also distinctly depressed behind and shows faint traces of scrobes.

P. KITSCHNERI, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 436, ♀, ♂ (?), 1910.

"♀ 3.2 mm. Resembling *P. minima*, Mayr, but the frontal carinae are not prolonged backwards, and do not form scrobes. Mandibles smooth, feebly punctured. Clypeus shallowly emarginate in the middle, also feebly carinate in the middle, and having a longitudinal carinula on each side extending from the articulation of the antennae to the anterior margin. Head fairly depressed, obtusely rectangular, the sides convex, slightly longer than wide, feebly concave behind, as wide in front as behind, with a deep occipital sulcus joining the frontal sulcus. Eyes fairly small, placed at the anterior third. The scape does not reach the posterior third of the head. The pro-mesonotum forms a single convexity, without a transverse impression or torus; it is, however, truncate behind and margined above on each side with a little ridge. Epinotal spines acute, shorter than half the space between them. Petiole as in *P. punctulata*, Mayr, but the 2nd node a little narrower. Pronotum without prominent posterior lateral angles. Anterior half of the head longitudinally rugose; a few rugae and reticulations on the sides of the epinotum. The rest of the body smooth. Erect pilosity yellowish, sparse on the body, absent from the tibiae and scapes, which have only sparse, oblique, or nearly decumbent hairs. Brownish-yellow; legs and antennae dirty yellow.

"♀ (?). 2.5 mm. Head oval-rectangular. Mandibles dentate, striate near the base. Clypeus without carinae, feebly emarginate. The mesonotum with two small ridges behind, as in the ♀. Epinotum subdentate. Head fairly smooth in front, excepting a few rugae in the antennal hollows; epinotum reticulate. Otherwise in sculpture, pilosity and colour like the ♀.

"Mountains of Natal (Wroughton). A species distinctly characterised in the ♀ by the shape of the head, clypeus and mesonotum."

P. ARENIPHILA, Forel.

Schultze, Reise Süd-Afrika, vol. 4, p. 11, ♀, ♂, ♀, ♂, 1910.

"♀. 4.2-4.7 mm. Mandibles smooth, shining, sparsely punctured, with two teeth in front and two behind, flattened externally at the

base. Lower margin of the head in front bidentate. Clypeus with a low swelling in the middle, but not carinate, emarginate in the middle in front. Head as wide as long, wider behind, the sides convex posteriorly (widest behind the eyes), deeply excised behind, the occipital groove strong and merging into the frontal sulcus, not depressed behind. The scrobe, which receives the whole of the scape, is reticulate-punctate, not deep, margined above by the frontal carina and below by a strong longitudinal ruga; there is also a shallow impression to receive the end of the flagellum. Frontal carinae prolonged as far as the end of the scapes. Eyes convex, placed at the anterior third. The scape extends back as far as the posterior third of the head. All the joints of the flagellum longer than wide. Head 1.7 mm. long and equally wide. Pronotum rounded above, with two very obtuse and indistinct tubercles. Mesonotum with a very deep transverse impression, and a strong, thick and transverse torus. Dorsum of epinotum horizontal, somewhat longer than the declivity, excavated in the middle posteriorly. Epinotal spines long, thin, as long as the interval between them, directed more upwards than backwards. First node of petiole almost cuneiform, with a fairly long peduncle in front, narrow, very feebly emarginate above. Second node almost three times wider than the 1st, wider than long, very angularly dilated at each side (rhomboid). Fairly shining. Head coarsely and regularly rugose longitudinally, lightly reticulate in between, the posterior part of the head merely reticulate. Thorax coarsely and irregularly rugose transversely, reticulate between the rugae. Petiole more closely reticulate, nearly dull, with a few transverse rugae. First segment of abdomen finely and lightly reticulate, the rest nearly smooth. A fairly short, sparse and yellowish pilosity on the body, the legs and antennae with decumbent hairs only. Brownish yellow-red; the legs paler. Abdomen in front of a bright brownish-yellow, entirely or partly brown behind.

“♀. 2.3–2.5 mm. The whole of the masticatory margin of the mandibles dentate. Clypeus without emargination. Head longer than wide, convex behind the eyes, but the sides converge gradually up to the articulation, without a distinct hind margin and without a neck. Eyes strongly convex, placed in the middle of the sides. The scape extends beyond the articulation of the head by quite one-third of its length. No trace of a scrobe. Mesonotum transversely impressed. Dorsum of epinotum much longer than wide and longer than the declivity, with two fairly long spines which are almost as long as the interval between them. First node low, cuneiform, with a long peduncle. Second node quite three times wider than the first, very

wide and as long as wide. Fairly shining, lightly and finely reticulate all over; posterior half of abdomen smooth. Pilosity as in the ♀. Reddish-yellow, head brownish-yellow. Abdomen yellowish, with brown apex and often with brown sides.

“♀. 6.5 mm. Mandibles, clypeus and scrobe as in the ♀. Head trapezoidal, wider than long, narrower in front, the posterior margin straight. Eyes in the anterior third. The scape does not quite reach as far as the posterior margin of the head. Mesonotum somewhat wider than the head, flat above, with two lateral longitudinal lines. Spines nearly as long as the dorsum of the epinotum, blunt at the apex. Petiole as in the ♀, but the even wider 2nd node has the sides acutely conical. Head coarsely, mesonotum finely and evenly rugose lengthwise. Epinotum smooth above; sides of thorax coarsely rugose. Petiole and abdomen as in the ♀, but the first abdominal segment is nearly dull and closely reticulate-punctate over its basal half. Pilosity as in the ♀. The exerted hairs on the body very short. Yellowish-red; legs and base of the abdomen dirty yellow, the rest of the abdomen dark brown. Deälated.

“♂. 5-5.2 mm. Mandibles bidentate. Head, excluding the eyes, as wide as long, narrowed like a trapezoid towards the articulation behind. Dorsum of epinotum much longer than the declivity, ending in two blunt tubercles. Scape as long as the second joint of the flagellum. Fairly shining, finely and irregularly reticulate or rugulose. Pilosity as in the ♀ and ♂. Brownish-yellow. The vertex and abdomen in part brownish. Wings tinged with brownish-yellow, nervures brownish-yellow, stigma brown.

“Khakhea, Kalahari (Schultze), in sand. Perhaps allied to *caffra*, Em., but the latter has the head strongly depressed behind in the ♀.”

P. VANDERVELDI, Forel.

Rev. Zool. Afric., vol. 2, p. 326, ♀, 1913.

“♀. 7 mm. Closely allied to *speculifera-crassinoda*, Em., and particularly to its var. *cubangensis*, Forel. It differs particularly in its much longer scape, which almost extends back to the posterior third of the head, (to the posterior half in *speculifera*), also in its head, which is much longer than wide, the sides but slightly convex (very convex in *speculifera* and only little less so in *cubangensis*) and in the mesonotum, which has a stronger torus behind, and the pro-mesonotal suture, which is deeper. The eyes are also more convex. The head is in great part dull, with a strong and sparse puncturation on the occiput and vertex. The sides of the occiput alone are slightly shining.

The rugae on the front of the head are coarser and wider apart than in *cubangensis*. The thorax is dull, and so also are the petiole and the base of the abdomen, which are simple reticulate-punctate, whereas the thorax is indistinctly rugose as well. Dark brown, the legs paler, the tarsi and flagellum rusty red. Otherwise identical with var. *cubangensis* of *speculifera*, with the same large node.

“♀. 3·9–4 mm. Larger than *speculifera-crassinoda*, the hind margin of the head rather indistinct but nevertheless defined, wanting in *speculifera*. The antennae are a little longer, and also the joints of the flagellum. The same differences present in the ♂ also occur in the mesonotum of the ♀, which has a distinct tubercle in front, which is absent in *speculifera*. Entirely dull except the posterior half of the abdomen and the legs, which are shining. The front of the head has some fairly coarse and longitudinal rugae. The pilosity is oblique and more abundant than in *speculifera*. Entirely black, the legs, scapes and mandibles brown. Tarsi and club of the antennae rusty red.

“Sankisia, Katanga (Dr. Bequaert); perhaps simply a race of *speculifera*.” Durban (Traegaardh), *teste* Santschi.

TRIBE CREMASTOGASTRINI, Forel.

Including only the following genus.

GENUS CREMASTOGASTER, Lund.

Ann. Sc. Nat., vol. 23, p. 132, 1831.

Characters.

♀. Antennae 10- or 11-jointed (rarely 9-jointed, *C. edentula* Santschi), the club formed of two or three joints; maxillary palpi 5-jointed; labial palpi 3-jointed. Thorax usually widest in front, constricted at the meso-epinotal suture. The latter deep and well defined, the pro-mesonotal suture usually more or less obliterated at least in the middle. Epinotum armed with two teeth or spines, rarely unarmed. First segment of petiole squamose or cuneiform and decumbent, articulating with the epinotum by a very short and narrow piece, or almost sessile in front; 2nd segment thick, with a short peduncle in front, nodose behind, the node frequently grooved in the middle lengthwise so that the node appears to be made up of two hemispherical lobes or discs. Petiole articulating with the dorsal surface of the abdomen. The latter subcordate, the basal margin straight or subtruncate.

♀. Antennae 10- or 11-jointed. Thorax elongate, pronotum not exposed dorsally. Epinotum with the spines or teeth usually much shorter than in the ♂, or reduced to mere angles. Abdomen oblong-ovate, narrowed apically. Wings with 1 cubital and 1 discoidal cell; the radial cell usually closed. Petiole as in the ♂, but the first segment thicker.

♂. Considerably smaller than the ♀. Antennae 12-jointed, the scape short, rarely longer than the 1st and 2nd joints of the flagellum taken together; usually all the joints of the flagellum except the 1st longer than wide. Pronotum not exposed above; mesonotum and scutellum high; Mayrian furrows obsolete or indistinct. Epinotum unarmed. Segments of the petiole shorter and flatter above than in the ♀. Abdomen subcordate or ovate. Legs thin.

Distribution both hemispheres.

This very large genus contains very many closely allied forms, and to judge by its tendency to form minute variations, appears still to be in a very plastic condition. Owing perhaps to this condition, which does not appear to have been sufficiently realised by some myrmecologists, and also to the lack of abundant material, the taxonomy of the genus is hopelessly confused, and its study presents us with greater difficulties than that of any other genus represented in our region. Many species have a very extended distribution, and exhibit numerous geographical subspecies and varieties. The variation may apply to one or several anatomical features, in such a way that a species may possess several extreme forms, at least some of which are connected with the central type-form by a series of more or less gradual and transitional links. Where such links are numerous, no doubt is left as to the relationship of the terminal forms to the central type. But on the other hand, such links are frequently missing, and where the gaps appear to be rather wide, the tendency has been to accord specific rank to each form. If at a later period the annectant forms are discovered, the natural result is to render the boundaries between the so-called species exceedingly vague, in which case it becomes very difficult to place the latter in any analytical key unless their status is revised and altered. With the yearly growth of our knowledge of the genus and the increase of material brought about by labours of collectors over the whole continent, the time will come when we shall be able to unite many so-called species as forms of one type, and thereby reduce the number of apparently distinct species which are recognised at the present day.

Apart from the differences manifested in geographical varieties, minor distinctions may be shown to occur in the members of the different nests of one species, and it is therefore desirable that large

series derived from many nests and localities should be studied before attempting to make innovations in the classification. It is frequently the case that the ♂ ♀ of the first brood differ not only in size but also in minor details of structure from those of later broods, and I am inclined to believe that not a few new races and varieties have been erected on such slender foundations.

In the separation of the species the following points should be noted:

The pro-mesonotal suture, although usually more or less effaced in the middle, can generally be traced by a depression which becomes deeper at the sides and is often angular in form. At the apex, or a little behind the apex of the mesonotum, there is in many species a longitudinal median tubercle or carinula. It is of some diagnostic value, but as it is liable to variation in the degree of prominence and length, even within the species, too much reliance should not be placed on it. The epinotal spines are similarly variable within the limits of a species, and a great deal too much importance has been attached to the comparative length of those structures in the separation of the species. The mesonotum has a declivous face behind, just above the meso-epinotal suture. This face is usually much shorter than the anterior and more or less horizontal face; it is sometimes concave transversely, and its lateral margins are sometimes defined by sharp raised edges or carinulae. The length of the declivity and its degree of obliquity are characters of diagnostic value and fairly reliable. The 1st joint of the petiole is nearly always thicker (from above to below) behind than in front, and seen from above is generally of a trapezoidal or triangular form, the apex of the triangle truncate and invaginating the short and globose peduncle of the 2nd joint. In measurements of these two joints the length of the 1st should be taken from the level of its anterior angles to the level of the point behind where it touches the anterior margin of the node of the 2nd joint; the length of the 2nd joint should be taken over the node only, since the short peduncle in front is telescoped into the 1st joint to a variable depth and can rarely be seen in its entirety (see Text-fig. 31). Owing to the peculiar mode of attachment of the petiole, which is articulated to the base of the dorsal plate of the abdomen, the latter can be carried reflected over the thorax, and this attitude is assumed when the insect is alarmed, but in some species that position of the abdomen is adopted without any apparent provocation, more especially when the insect is moving head downwards on a vertical or steep plane.

From the anal glands a sticky whitish fluid of an unpleasant odour is secreted, which is freely exuded when the ants are disturbed.

All the members of the genus are very fond of sugary substances, and for this reason most of them are aphidicolous and coccidicolous, and also cultivate the society of Membracid, Fulgorid and Lycaenid larvae for the sake of their secretions. In some Indian species (sub-genus *Physocrema*) the ants appear to be able to draw on a supply of fluid furnished by their own bodies and secreted by the epinotal glands. These glands, which are probably to be found in most ants, are greatly developed in this sub-genus, so that the epinotum becomes greatly inflated. The gland communicates with the exterior by a

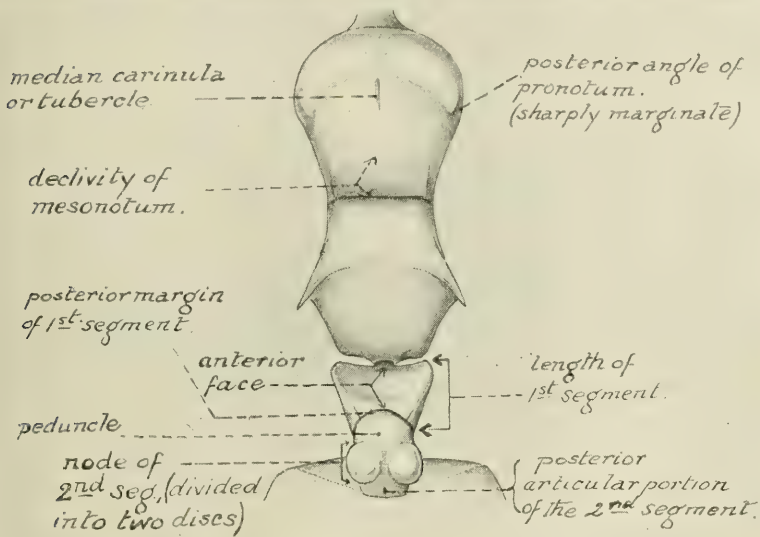


FIG. 31.—Thorax and petiole (semi-diagrammatic), *Cremastogaster*, ♀.

small aperture on each side situated below or behind the stigmatic orifice. Bingham remarks that “in live specimens there seems to be a continual flow from this aperture of a sweet fluid, and I have watched the ♀♀ of *C. physothorax* licking one another’s thoraces vigorously.”

With the exception of an undetermined sp. of *Microdon*, which was bred from the nest of *C. castanea* var. *medio-rufa* (collected at Aberdeen, C.P., by Dr. Brauns), no records of parasitic or myrmecophilous insects attached to this genus are known to me from our South African species. Nevertheless, in other parts of the world various insects of different orders have been found in the nests of *Cremasto-*

gaster, such as the coleopterous *Myrmedonia*, *Conurus*, *Xenalluandia*. and a few Paussidae and the orthopterous *Myrmecophila*.

Most of the species of the genus are tree-ants, making their nests under the bark, in hollow branches or forming carton nests, which may be either sheltered in cavities in the trees or attached to branches, reeds and bushes. The character of the nest built by any one species is not invariable. Thus *rufo-nigra*, which in Natal usually builds large carton nests attached to the branches of a tree or shrub, is, according to my experience, always found in S. Rhodesia to make its nest in hollow branches, empty galls or under stones without the elaboration of any carton-like substance. Very few of our Rhodesian species nest as a rule in the ground, although young incipient nests may occasionally be found in that situation.

Key to the ♂ ♀ of Cremastogaster.

- (46) 1. Antennae 11-jointed.
- (3) 2. Antennae exceptionally long, extending back as far as the petiole, and one-third of the scape extending beyond the hind margin of the head
Schultzei, Forel.
- (2) 3. Antennae of usual length.
- (7) 4. Head distinctly longer than wide, parallel-sided or nearly so.
- (6) 5. First joint of petiole trapezoidal; scapes short, reaching the posterior third of the head. *nigronitens*, Santschi.
- (5) 6. First joint of petiole oblong, one-third longer than wide; scapes longer, reaching the posterior fourth of the head
Welmani, Forel, race *retusa*.
- (4) 7. Head as wide as, or wider than long, very rarely a trifle longer than wide, the sides more or less convex.
- (17) 8. First joint of petiole not trapezoidal.
- (10) 9. Head and thorax strongly striate; 1st joint of petiole subpyriform, longer than wide, not much wider in front than behind
arborea, Mayr, race *melanogaster*, Em.
- (9) 10. Head and thorax not strongly sculptured; 1st joint of petiole not subpyriform.
- (12) 11. First joint of petiole quadrate, wider than long
sordidula, Nyl., var. *rectinota*, Forel.
- (11) 12. First joint of petiole longer than wide.
- (16) 13. First joint of petiole minutely bidentate near the posterior margin; the 2nd node globose and without even a trace of a median groove.
- (15) 14. Epinotum sharply and widely reticulate, its dorsal lateral margins strongly convex; abdomen elongate, not cordate
transvaalensis, Forel.
- (14) 15. Epinotum not sharply reticulate, the lateral dorsal margins straight and divergent; abdomen cordate
Muralti, Forel, race *livingstonei*, Santschi.

- (13) 16. First joint of petiole not bidentate behind; 2nd node with a feeble median groove; epinotum with very small teeth
constructor, Emery.
- (8) 17. First joint of petiole more or less trapezoidal, widest in front.
- (19) 18. Second node of petiole much wider than long and clearly wider than the 1st; whole body very polished and shining *Santschii*, Forel.
- (18) 19. Second node of petiole not wider, or very little wider than long.
- (29) 20. Second node of petiole without a median longitudinal groove, entire or only slightly emarginate behind; pronotum sharply marginate at the sides, at least on the posterior half.
- (28) 21. Dorsum of epinotum not deeply impressed longitudinally in the middle; mesonotum without a wide transverse impression on each side behind the median tubercle; seen in profile, the mesonotum is not raised above the level of the pronotum.
- (23) 22. Pro-mesonotal suture very shallow, obsolete or nearly so over the middle third . . . *Kneri*, Mayr, race *hottentota*, Emery.
- (22) 23. Pro-mesonotal suture deep and wide, at least at the sides, and fairly clearly defined in the middle.
- (25) 24. Head in greater part smooth and shining; colour more or less bright ochreous . . . *gambiensis*, Andre, var. *krantziana*, Forel.
- (24) 25. Head distinctly sculptured; colour more or less dark brown or reddish-ochreous.
- (27) 26. Median carinula of mesonotum prominent and long; colour dark brown; dorsum of epinotum rather deeply impressed in the middle
Kneri, Mayr, var. *amita*, Forel.
- (26) 27. Median carinula less prominent; colour reddish-ochreous; dorsum of epinotum very shallowly impressed . . . *Kneri*, Mayr.
- (21) 28. Dorsum of epinotum very deeply impressed in the middle; mesonotum with a transverse and wide impression on each side behind the median tubercle; seen in profile, the mesonotum is raised above the level of the pronotum . . . *Kneri*, Mayr, var. *matabele*, Arnold.
- (20) 29. Second node of petiole more or less clearly grooved longitudinally in the middle.
- (31) 30. Epinotum unarmed, or with very minute dentiform tubercles
inermis, Mayr, and races.
- (30) 31. Epinotum with distinct spines or teeth.
- (33) 32. Epinotal spines curved downwards . . . *Buchneri*, Forel.
- (32) 33. Epinotal spines horizontal or directed more or less upwards.
- (45) 34. Sides of pro-mesonotum not marginate, or (rarely) the sides of the mesonotal declivity feebly marginate.
- (36) 35. All the joints of the flagellum as long as, or longer than wide
Group A, q. v. *infra*.
- (35) 36. At least some joints of the flagellum wider than long.
- (38) 37. Head, excepting a narrow longitudinal streak on middle of the vertex, dull and closely sculptured . . . *Group B*, q. v. *infra*.
- (37) 38. Head very superficially sculptured and fairly shining, at least over the posterior two-thirds.
- (40) 39. Small species, 3 mm. or less; head not reddish. . . *gallicola*, Forel.
- (39) 40. Larger species 3-5 mm.

must sink as a synonym of *castanea*, Smith, which antedates it; it is retained, however, as the sub-specific name of the form which occurs in Madagascar and Natal. As far as I am aware the type-species is not African.

Race TRICOLOR, Gerst. (Plate VI, figs. 72, 72 a).

Monatsb. Akad. Wiss. Berlin, p. 263, ♀, 1858.

Forel, Mitth. Schweiz. Ent. Ges., vol. 7, p. 388, ♀, ♂, 1887.

♀. 4.2–4.8 mm. Head, thorax and petiole varying from bright yellowish-red to chestnut-red (burnt sienna), the 1st segment of the abdomen varying from ochreous yellow to reddish ochreous over its basal two-thirds, the whole of the remaining segments dark brown with yellowish and somewhat translucent apical margins. Tibiae and tarsi more or less brownish-red. Antennae coloured like the head but somewhat fuscous on the club and on the basal half or two-thirds of the scape. Pilosity almost entirely absent excepting a few short and thin hairs on the pronotum and apical margins of the abdominal segments. Pubescence very fine, microscopical, not very abundant, decumbent all over except on the flagellum, where it is oblique and longer than elsewhere. Head dull, very finely and closely rugulose longitudinally, sometimes almost striato-rugulose; the anterior corners, between the antennal sockets and the eyes, distinctly striated obliquely. The space between the frontal carinae is slightly shining, with the sculpture somewhat effaced. Mandibles longitudinally striate, dull, the masticatory margin black, armed with 4 or 5 sharp teeth. Thorax dull, reticulate-rugulose, the sculpture on the epinotum becoming progressively weaker, so that at least the lower half of the declivity is smooth and shining. Occasionally there is a feeble longitudinal rugosity superimposed on the pronotum and extreme base of the epinotum. Petiole microscopically reticulate or alutaceous, dull except the upper face of the 1st node, which has a slight gloss. Abdomen and legs feebly shining, the former very finely alutaceous.

Head rotund, a trifle longer than wide, the sides convex, the hind angles widely rounded, the posterior margin very feebly concave in the middle, or nearly straight. Anterior margin of the clypeus feebly convex in the middle; the median area fairly convex transversely and lengthwise, its posterior margin arcuate and not clearly defined. Frontal area triangular and indistinct. Behind it is a median impressed line ending at the posterior third of the head. Scape as long as the head, 1st joint of flagellum twice as long as wide, 3rd and

4th joints as long as wide, all the remaining joints longer than wide, the club 3-jointed. Thorax at its widest point hardly half the width of the head. Pronotum much wider than long, the posterior half of the sides sometimes fairly sharply margined. Pro-mesonotal suture indicated by a wide and shallow depression. Mesonotum longer than its basal width, the sides marginate, the median tubercle elongate and well defined. Meso-epinotal suture very deep. The dorsum of the epinotum widens gradually backwards, and merges gradually into the oblique declivity, which is longer than the dorsum. Epinotal spines acute, strongly divergent, directed obliquely upwards, nearly two and a half times longer than their basal width, as long as, or a little longer than the dorsum of the epinotum. First node of petiole more or less subcordate or trapezoidal, the anterior angles rounded, the dorsal face shallowly concave transversely, wider than long. Peduncle of 2nd joint as long as its node, the latter twice as wide as long, and divided by a strong longitudinal groove into two more or less spherical and convex discs. Abdomen cordate-triangular, longer than wide, the basal margin straight, with moderately sharp angles.

♀. 8.6 mm. Pilosity and pubescence as in the ♂, the colour similar but darker. Head dull, finely, closely and longitudinally striate, the striae curving outwards behind the ocelli, the spaces between the striae very finely and sparsely punctured and somewhat rugulose. The clypeus and anterior third of the head more strongly striate than the rest. Mandibles strongly striate and punctured between the striae. Pronotum dull and finely reticulate-punctate and rugulose. Mesonotum and scutellum smooth and shining, sparsely and finely punctured. Dorsum of epinotum feebly rugose and dull, the sides sharply striate and reticulate-punctate between the striae; declivity smooth and shining. Sides of thorax reticulate-punctate and longitudinally striate, more finely so than on the sides of the epinotum. Nodes coriaceous and dull, the 2nd also shallowly punctured. Abdomen smooth and moderately shining. Head widest in the middle, the sides converging in front of the eyes, parallel and straight behind the same, the posterior margin straight, strongly convex above. Head nearly one-third wider than the thorax. Mesonotum moderately convex from side to side, a little longer than wide. Parapтера and scutellum together a little more than half as long as the mesonotum. Dorsum of epinotum nearly four times wider than long, merging by a very short curve into the vertical declivity. First node of petiole similar to that of the ♂ but shorter, more deeply excavated in front, with the anterior angles more rounded. Second node convex at the sides, one and a-half times wider than

long, the median groove almost obsolete. Abdomen one and a-half times longer than wide. Deälated.

“♂. 3·7 mm. Head and abdomen brown, the rest of a very pale brown. Wings hyaline. A moderate and oblique pilosity present on the body. First joint of petiole wider in front than behind.”

Durban, Grahamstown and Port Alfred. Common in Natal. (S.A.M., R.M., G.A. colls.)

Var. *SIMIA*, Forel.

Schultze, Reise Süd-Afrika, vol. 4, p. 6, ♀, ♀, ♂, 1910.

“♀. 4-6 mm. Larger than the type-species, from which it differs by the coarsely and longitudinally rugose dorsum of the thorax, the declivity of the epinotum excluded. The mesonotum is also less sharply marginate. Otherwise like the type in all particulars, including colour and the dull reticulate-punctate sculpture of the thorax.

“♀. 9·5 mm. Head large, much wider than the thorax. Mesonotum smooth. Sides and dorsum of epinotum longitudinally rugose. Otherwise like the type of the species.

“♂. 4·3 mm. Mesonotum partly longitudinally rugose (*rugulose*?) and shining. Otherwise like the type-species.

“Chakamakue, between Lehututu and Letlake, Kalahari. In acacia wood.”

Var. *DURBANENSIS*, Forel.

(As var. of *ferruginea*) Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 234, ♀, 1916.

♀. 4-5 mm. Head, thorax and petiole brownish-red (burnt umber), the thorax sometimes paler than the head. Abdomen dirty ochreous-yellow, the apical fourth of all the segments brownish. The meso-epinotal suture is deeper than in *tricolor* or *rufonigra*, and the base of the epinotum a trifle more convex lengthwise than in *tricolor*. The dorsum of the epinotum widens rapidly backwards (*i. e.* the sides are strongly divergent posteriorly) and the spines are about twice as long as their basal width. The 2nd node of the petiole has a deeper and narrower median groove than *tricolor*. Otherwise like that race.

♀. 9 mm. Abdomen dark reddish-ochreous, the apical margins brownish, the apical segment yellowish-brown except at the base. The upper face of the 1st node is more concave, and the excavation extends further back than in *tricolor*. Otherwise like that race.

Durban. (S.A.M., R.M., G.A. colls.)

This variety should be attached to race *tricolor* rather than to race *ferruginea*. The dorsum of the metanotum is like that of *tricolor*, and moreover, except in colour and the shape of the 1st node, the ♀ ♀ of the two are indistinguishable.



FIG. 32.—Race *tricolor*, var. *durbanensis*.

Race RUFONIGRA, Emery.

Ann. Soc. Ent. France, vol. 63, p. 27, ♀, 1895.

♀. 4.2–5 mm. Head and thorax varying from pale reddish-brown to dark chestnut (a reddish burnt umber). Petiole darker than the thorax, abdomen dark brown or brownish-black, a trifle paler at the base but not yellow as in race *tricolor*. Legs dark brown, tarsi more ferruginous, antennae reddish-brown, the club and scape usually darker. The fundamental sculpture of the thorax is a little stronger, and the reticulations wider apart than in *tricolor*. The sides of the mesonotum are not so sharply margined as in that race, and the epinotal spines are considerably stouter, especially at the base, and also a little shorter or not more than twice as long as their basal width. The median groove on the second node is shallower than in *tricolor*, and the posterior margin of the discs of the node less sharp. Otherwise like race *tricolor*.

♀. 8–9.6 mm. (hitherto undescribed?). Head dark chestnut red, usually paler in front. Thorax dark brown, the epinotum and petiole less dark. Abdomen black, legs and antennae dark brown. The apex of the scutellum is narrower and more angular than in *tricolor*, and the brow of the declivity of the epinotum is less abrupt. The 2nd node is more distinctly divided into two discs, the median groove being fairly deep behind. Otherwise like *tricolor*. Wings hyaline, nervures and stigma pale yellow.

♂. 4 mm. Dark brown; the head black, the paraptera, metanotum, dorsum and declivity of epinotum brownish-yellow or yellowish-brown. Flagellum pale dirty ochreous; tarsi pale brown; wings hyaline, nervures and stigma brownish-yellow. Pilosity pale yellow, short and scanty, exerted on the scutellum and petiole, more or less decumbent elsewhere. Flagellum with abundant and exerted pubescence. Head

very finely striate longitudinally, and in part reticulate punctate, dull, except a shining groove between the clypeus and the indistinct frontal area. Anterior half and sides of mesonotum shining, the median portion behind very finely striate and duller, with large and shallow punctures all over. Scutellum and epinotum smooth and shining, the latter very shallowly rugulose near the base. Petiole moderately shining, the 1st node faintly reticulate-punctate. Abdomen shining, the first segment with a few large and shallow punctures. Head one-third wider than long, widest in front, the sides subparallel for a short distance behind the eyes, thence converging posteriorly. The eyes occupy a little more than the anterior half of the head. Scapes very short, hardly twice as long as wide, or about as long as the 2nd joint of the flagellum; the 1st joint of the latter subglobose, as long as wide. Mandibles small, with 2 or 3 teeth. Anterior half of mesonotum very convex transversely and lengthwise. Mesonotum a little longer than wide, sides of scutellum vertical, very finely striate longitudinally. Dorsum of epinotum very short, the declivity steep. First joint of the petiole as long as wide, the anterior half of the upper face excavated; 2nd joint nearly twice as wide as long, oblong.

S. Rhodesia, common.; Natal (H. W. B. Marley and C. B. Cooper). This is a pugnacious species, which in S. Rhodesia makes its nests in hollows in trees, or in hollow branches, and more rarely in galls; elsewhere it has been recorded as making large carton nests, attached to the branches of trees and shrubs. (S.A.M., R.M., G.A. colls.)

Var. MEDIO-RUFA, Forel. (Plate VI, figs. 77, 77a and b.)

Voeltzkow, Reise Ost Afrika, vol. 2, p. 81, ♀, ♂, 1907.

♀. 4 mm. Head, thorax and petiole reddish-brown, the median posterior fourth of the head and the sides of the thorax generally darker. Abdomen brownish black, antennae and legs dark brown. The sculpture is similar to that of race *rufonigra*, but stronger and more distinctly reticulate punctate (granulate). The dorsum of the epinotum also has a fine longitudinal striation superimposed, absent in the race. It differs from the latter in the following features: The sides of the pronotum are barely marginate, of the mesonotum not at all; the median tubercle of the latter is feebler, the declivity of the mesonotum is more oblique and shorter, and the suture shallower; the dorsum of the epinotum is narrower between the spines and more parallel-sided (in the race the dorsum is more or less trapezoidal).

♀. 8 mm. Pilosity and pubescence as in *rufonigra*, colour similar but a shade darker, particularly the head, which is castaneous red.

The head is duller than in the race, and the sculpture stronger, the spaces between the striae roughened. The scutellum is wider and less convex posteriorly, and the dorsum of the epinotum is strongly striate transversely and furnished with a fairly acute triangular tooth on each side (these are absent in the race). In addition, the declivity is vertical, its brow rectangular, the two faces not merging by a gradual curve as in the race. Wings hyaline, nervures and stigma dark brown (yellow in the race).

♂. 4.1 mm. Dark brownish-black. The sculpture is stronger than in the race, and the mesonotum has a very fine reticulate puncturation in addition to the rugulosity, and is in consequence duller. The posterior half of the 1st node is reticulate-punctate, and in front is vertically truncate. The exerted hairs on the epinotum, petiole and abdomen are longer and a little more plentiful than in the race. Otherwise like *rufonigra*.

Aberdeen, Cape Prov. (Dr. H. Brauns). (S.A.M., R.M., G.A. colls.; type of ♀ in my collection.)

Var. *CACODAEMON*, Forel.

(As race of *C. Peringueyi*, Em.) Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 234, ♂, ♀, ♂, 1914.

The insects described under this name by Dr. Forel include two distinct forms, one of which is a variety of *Peringueyi*, and the other variety described hereunder, which must be attached to *castanea*, race *rufonigra*, and is closely allied to var. *mediorufa*. For the other variety a new name is required, and will be treated further on as var. *angustior* of *Peringueyi*.

♀. 3.7-4.1 mm. Reddish piceous, the petiole and thorax in parts sometimes a little paler, abdomen piceous or black, legs and antennae dark brown. Sides of pronotum more convex than in *mediorufa*, the mesonotum more convex lengthwise, the declivity merging gradually into the anterior part of the mesonotum. Epinotal spines less divergent than in *mediorufa*. First segment of the petiole distinctly narrower than in *mediorufa*, much less widened in front than in that variety, and with less rounded anterior angles. Otherwise like *mediorufa*.

♀. 9.5 mm. Black, flagellum, mandibles and tarsi dark reddish-brown. The sculpture of the head a little finer and much closer than in *mediorufa*. Mesonotum, excepting a narrower anterior and median area which is shining, dull and coarsely rugulose-punctate. Dorsal face of the 1st segment of the petiole a little shorter, the anterior angles less rounded than in *mediorufa*. Otherwise like that variety.

♂. 3.8 mm. Thorax narrower than in *mediorufa*, the median shining area on the mesonotum narrower and more sharply defined. Second segment of the petiole wider and shorter, twice as wide behind as long (one and a-third times wider than long in *mediorufa*). Otherwise like that variety.

Willowmore, C.P. (Arnold). The nest is a small and irregularly-shaped carton nest attached to the branches of median-sized shrubs or small trees.

Var. *QUISQUILIA*, Santschi.

Ann. Soc. Ent. France, vol. 84, p. 502, ♀, 1916.

♀. 5 mm. Of a brighter red than in the type, the base of the abdomen diffusely reddish-brown in some specimens. The fundamental sculpture is stronger than in the race, and the thorax has also some longitudinal rugae which are strongest on the base of the epinotum. The epinotal spines are a little longer than in the type of the race, and are also slightly sinuate in their apical half. The anterior angles of the 1st node are more pronounced, and the upper face of the node is distinctly margined at the sides. Otherwise like the race.

Victoria Falls, S.R. (G.A. coll.)

Var. *BRUTA*, Santschi.

(As race of *ferruginea*, Forel.) Bull. Soc. Ent. France, p. 412, ♀, 1913.

♀. 4.3-4.5 mm. Head and thorax reddish-brown or sordid yellowish-brown; 1st, 2nd and 3rd segments of abdomen more or less dark, brownish-yellow in the middle, shading off to dark brown at the sides and at the extreme apical margins, the paler areas most distinct on the 1st segment, the apical segments dark brown. The median tubercle of the mesonotum is stronger than in *quisquilia*. The petiole is narrower than in that variety, and the 1st joint less distinctly margined at the sides. The 2nd joint is longer than it is wide across the middle. Apart from these slight differences this form hardly differs from var. *quisquilia*, and I think it should therefore be placed with *rufonigra* rather than with *ferruginea*.

Springvale, S. Rhodesia. (G.A. coll.)

Race *FERRUGINEA*, Forel.

(As species) Mitth. Schweiz. Ent. Ges., vol. 8, p. 353, ♀, 1892.

“♀. 4.8-6 mm. Mandibles longitudinally striate, with 4 or 5 teeth. Head, excluding the mandibles, rectangular and rounded at

the angles, somewhat wider than long, fairly straight in front and behind, much the same as in *tricolor*, but with the sides less convex. Club of antenna distinctly 3-jointed. Pronotum and mesonotum about the same as in *tricolor*, but the pronotum is nevertheless narrower and less sharply and less projectingly marginate at the sides. The lateral marginal carinae of the mesonotum are more obtuse and less distinct behind. Meso-epinotal suture as in *tricolor*. The epinotum is much narrower than in *tricolor*, especially in the middle at the level of the spines, and hardly wider there than in front or behind (rhomboidal in *tricolor* and strongly dilated in the middle). Moreover, the sides of the dorsum of the epinotum diverge but feebly, so that the thorax, seen from above, appears less constricted than in *tricolor*. The spines are fairly long, thin, and widely divergent. The declivity of the epinotum is lower and more oblique than in *tricolor*. First segment of the petiole trapezoidal, with rounded anterior angles and straight anterior margin, wider in front than long, and wider there than behind, with a blunt tooth in front below. Second segment of petiole divided by a median groove into two hemispheres. Abdomen fairly flat, long and relatively narrow. Head closely and finely punctate-rugulose, with a somewhat silky gloss. Thorax coarsely and sparsely longitudinally rugose, closely reticulate-punctate between the rugae and fairly dull, excepting the smooth and shining declivity of the epinotum. Petiole closely reticulate-punctate. Abdomen feebly reticulate, evenly and sparsely punctured, very shining. Outstanding pilosity almost obsolete. Femora and scapes with a decumbent pubescence. The pubescence is very short and scattered. Rusty yellowish-red. The abdomen brighter, of a reddish brown-yellow. Legs and club of antennae brownish. Mandibles brownish-red. Closely allied to *tricolor*, but clearly distinct on account of the shape of the epinotum and the 1st segment of the petiole, by the longer, narrower, and flatter form, and by the colour and sculpture."

Somaliland; and East Coast of Africa, including Natal.

Having only a single specimen (a co-type) of this species, I have preferred to copy the original description. In the specimen referred to the dorsum of the epinotum is shorter and much more convex lengthwise than in *tricolor*; the spines are shorter than in that race, or not quite twice as long as their basal width, and a little shorter than the dorsum of the epinotum. The posterior margins of the hemispherical discs of the 2nd node are more elevated and prominent than in *tricolor*, and the pro-mesonotal suture is also deeper.

C. NEUVILLEI, Forel.

Rev. Ent. (Caen), vol. 26, p. 140, ♂, 1908.

“ ♂. 3.9–5 mm. Mandibles strongly striated, the masticatory margin moderately oblique, short. Anterior margin of clypeus straight and entire. Frontal area distinct. Head more or less quadrate, slightly wider than long, distinctly wider behind than in front, feebly emarginate behind, rounded behind the eyes. The latter fairly large, placed in the middle of the sides, of which they occupy nearly one-quarter. The scapes extend back as far as the occipital margin. Antennae 11-jointed, all the joints of the flagellum longer than wide, but the 3rd–5th joints are almost as wide as long. Club 3-jointed. Dorsum of pronotum convex and marginate. Pro-mesonotal suture distinct. Dorsum of mesonotum longer than wide, wider in front than behind, slightly convex, marginate at the sides, without a median carina or tubercle. Meso-epinotal suture fairly strong. Dorsum of epinotum fairly convex, widened posteriorly, wider than long, ending in two robust spines, short, feebly pointed, subhorizontal, feebly divergent and slightly curved inwards; their external margins continuous with those of the dorsum; they are a little longer than their basal width. Declivity oblique, as long as the dorsum of the epinotum. First node as in *C. scutellaris*, Ol., widened in front, the anterior margin straight, the anterior angles rounded, without a tooth below. Second node divided into two subcircular halves by a deep groove; it is a little less wide than the 1st node. Abdomen fairly elongate. Finely but quite distinctly reticulate, not very shining. Thorax and petiole subopaque. Clypeus and cheeks finely and closely striated longitudinally. Pronotum finely rugose transversely. Legs and scapes reticulate; declivity of the epinotum smooth. There is a sparse and much obliterated puncturation, somewhat more distinct on the abdomen. Pilosity absent, except a few hairs on the front of the head and the under-side of the abdomen. There is a yellowish, adjacent, short and evenly spaced pubescence on the whole body and on the limbs. Castaneous brown, including the legs. Thorax and petiole of a rather paler brown. Abdomen yellowish rusty-red, mandibles and front of the head of a more reddish-brown.

“ Uomber, S. Africa.”

Race COOPERI, Forel. (Plate VI, figs. 76, 76 a.)

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 233, ♀, 1914.

“ ♀. 3.3–5 mm. Differing from the type-species by the 2nd node being much less deeply grooved. The groove is very superficial in

front of the constriction (*i. e. the posterior articulation of the node*). There is a very distinct transverse impression in the middle of the mesonotum which does not occur in the type. In addition, the abdomen has a fairly long pubescence, whereas it is very short and more scattered in the type. The colour is yellower and duller, but similarly distributed. Otherwise identical."

The transverse impression on the mesonotum is absent in the smaller ♀♀, and even in some of the larger ones. The epinotum is armed with very short, triangular teeth, somewhat variable in length, but not longer than their basal width. The scapes do not reach the occipital margin, falling short of the same by as much as the apical width of the scape. The dorsal face of the 1st node is distinctly concave from side to side, more so than in *castanea*, *tricolor* and *ferruginea*. The median tubercle of the mesonotum is very prominent, especially when seen from the side, and the dorsum of the epinotum is convex, short, hardly more than half the length of the declivity.



FIG. 33.—*C. Neuvillei*, race *Cooperi*.

♀. 9 mm. (hitherto undescribed). Castaneous brown, the petiole a little brighter, the apical margins of the abdominal segments dirty ochreous and translucent. Sculpture, pilosity and pubescence as in *tricolor*, but the epinotum above and at the sides is duller and more densely rugulose. The epinotal teeth as in *tricolor*, the declivity of the epinotum shorter. The scapes are shorter and thicker, not extending back beyond the posterior ocelli, also more strongly curved near the base. The 1st node is twice as wide as long, more deeply excavated in front than in *tricolor*; 2nd node feebly grooved posteriorly.

Durban. (S.A.M., R.M., G.A. colls.; type of ♀ in my collection.)

Race *COOPERI*, var. *INGRAVIS*, Forel.

Loc. cit., p. 341, ♂.

♂. 3.1–4.8 mm. Much darker than the race, of a warm reddish-brown. The sides of the head are a little less convex. This form hardly merits separation as a variety; I am unable to confirm the other differences noticed by Forel.

Durban (L. Bevis and C. B. Cooper). (S.A.M., R.M., G.A. colls.)

C. NEUVILLEI, Forel, race CARININOTUM, Santschi.

Ann. Soc. Ent. France, vol. 85, p. 279, ♂, 1916.

“♂. 3·8–4 mm. Reddish-brown. Legs more or less pale castaneous brown, abdomen black, its base sometimes more or less reddish-brown. Occiput and 2nd joint of the petiole brownish. Reticulate, the thorax distinctly reticulate-punctate. Head finely and longitudinally striate; the frons more or less smooth. Abdomen very finely reticulate, almost smooth. Declivity of the epinotum smooth. Nearly dull, only the frons and abdomen fairly shining. Pilosity sparse, pubescence as in the type. Margin of pronotum rounded. The mesonotum has a median carina in front, absent from the type of the species and its races. Meso-epinotal constriction fairly deep; epinotal teeth as long as their basal width, but also somewhat variable. Second node of petiole as strongly grooved as in the type of the species, which it otherwise resembles.”

Bulawayo (Arnold).

C. BRUNEIPENNIS, Andre, race OMNIPARENS, Forel.

Rev. d'Ent., vol. 9, p. 323, ♂, ♀, 1890.

(Race) Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 237, ♂, ♀, 1914.

♀. 2·6–3·9 mm. Varying from a brownish ochreous yellow to a clear reddish-brown, the abdomen usually darker and the head paler



FIG. 34.—*C. bruneipennis*, race *omniparens*.

and more clearly reddish-brown or burnt sienna. Sides of head in front of the eyes finely longitudinally striate, the rest of the head very smooth and shining (more polished than in race *Cooperi*), sparsely, finely and sharply punctured. Thorax and petiole moderately shining, very superficially, irregularly and sparsely striato-rugulose. Abdomen smooth and shining. The anterior face of the pronotum is less oblique than in *Neuvillei*, race *Cooperi*, joining the dorsum by a shorter and more abrupt curve. The disc of the mesonotum is obliquely bevelled at the sides (in *Cooperi* it forms a continuous convexity transversely). In most specimens the epinotal spines are a little longer than in that race, and the median longitudinal impression on the dorsum of the epinotum is a trifle deeper. The petiole is shaped like that of *Cooperi*, but the 1st node is usually a little wider

(varying from one-fourth to nearly one-third wider than long), and the anterior angles are more widely rounded; the 2nd node has a shallow median groove, somewhat deeper than in *Cooperi*.

Durban (Arnold).

This form appears to me to be very closely allied to *Neuvillei*, and I would attach it to that species as a variety but for the fact that *bruneipennis*, Andre, is known to me only from the description. Indeed, some of the specimens determined by Forel as *omniparens* (No. 330, leg. C. B. Cooper) cannot be distinguished from *Neuvillei*, race *Cooperi*.

(S.A.M., R.M., G.A. colls.)

C. ACACIAE, Forel, race VICTORIOSA, Santschi.

Zool. Anzeiger, vol. 15, p. 142, ♀, 1892.

(Race) Ann. Soc. Ent. France, vol. 84, p. 497, ♀, 1916.

♀. 3-5 mm. Head, thorax and petiole varying from a clear yellowish-red to dark reddish-brown, the head usually paler and more yellowish. Abdomen dark brown or piceous, the apical margins of the segments testaceous, the 1st segment in greater part dull brownish ochreous, becoming lighter towards the base. Legs dull, ochreous, the antennae somewhat redder. Pilosity and pubescence sparse. Head very shining, the rest of the body moderately shining. Cheeks, clypeus and mandibles finely and longitudinally striate, the rest of the head smooth, shallowly and sparsely punctured, the occipital face microscopically rugulose. Pro- and mesonotum very finely rugulose, the mesonotum also finely striolate longitudinally; dorsum of epinotum rugulose, the rest smooth and shining. Head, excluding the mandibles, as wide as, or a little wider than long, the sides fairly convex, slightly narrowed in front (less so in the smaller ♂ ♀ than in the larger), the posterior margin almost straight. Eyes not small, placed in the middle of the sides of the head. Frontal area triangular and clearly defined; frontal sulcus distinct and extending to the middle of the vertex. The scape extends back as far as the occipital margin; 3rd-6th joints of the flagellum wider than long. Pronotum not marginate. Pro-mesonotal suture fairly well defined in the larger ♀ ♀. In the latter the mesonotum is fairly convex from side to side in front, and slightly constricted on each side in front of the declivous face, the latter short, oblique and feebly marginate at the sides. In the smallest ♂ ♀ the declivity of the mesonotum is almost obsolete, the profile of the pro- and mesonotum forming a single convexity as far as the meso-epinotal suture. The latter is fairly deep. Dorsum of

epinotum very convex lengthwise in the ♀ major, barely convex in the ♀ minor, about twice as wide as long, not much wider behind than in front, ending in two very divergent spines, directed obliquely upwards, distinctly curved inwards towards their extremity, and about one-fourth as long as the space between their bases. First joint of petiole trapezoidal, as wide as, or a little wider than long, the angles widely rounded. Second node very shallowly grooved in the middle, the groove becoming a little deeper behind, the hind margin emarginate in the middle and very prominent when seen in profile.

Victoria Falls. (S.A.M., R.M., G.A. colls.)

Not unlike *Neuvillei*, race *Cooperi*, from which it may be distinguished by the shape of the mesonotum, the more prominent hind margin of the 2nd node, and the 3rd-6th joints of the flagellum, which in *Cooperi* are longer than wide.



FIG. 35.—*C. acaciae*, race *victoriosa*.

C. excisa, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 10, p. 139, ♀, 1895.

“♀. 3.5-3.8 mm. Bright rusty red, antennae and legs brown, abdomen usually dark brown, the 1st segment either of a brownish-red more or less all over, or only at the extreme base. Pilosity altogether wanting; the short decumbent pubescence is very sparse on the head, thorax and petiole, less so on the abdomen and legs, more abundant on the antennae. Mandibles quadridentate, sharply striate longitudinally. The head is about as long as wide, or wider, the cheeks close and finely longitudinally striate, the clypeus more or less finely rugulose longitudinally, the anterior margin fairly straight, the frontal area indistinctly defined, the frons between the frontal carinae, and particularly in their immediate vicinity, finely and longitudinally rugulose, in the middle shining and often smooth, the back of the head shining and smooth, with very scattered piligerous punctures; laterally and near inner margin of the eyes finely rugulose, behind the eyes finely coriaceous-rugulose, or almost smooth. The scape of the 11-jointed antenna almost reaches the posterior margin of the head, the 3rd-5th joints of the flagellum wider than long, the two following joints about as long as wide, the club distinctly 3-jointed. The eyes are placed a little behind the

middle of the sides of the head. The moderately finely and longitudinally rugulose thorax is fairly short and quadrate, gradually narrowed from the rounded shoulders of the pronotum as far as the meso-epinotal suture. The pronotum, neglecting the neck-like prolongation in front, is wider than it is long in the middle, very distinctly marginate at the posterior angles and somewhat prominent; the pro-mesonotal suture somewhat impressed. The mesonotum is very feebly arched, the anterior part quite flat, the median carinula weak, distinctly marginate at the sides; the declivous face slopes downwards to the meso-epinotal suture fairly steeply and is feebly concave, and when seen obliquely from in front appears arcuately emarginate above, margined on each side by a sharp edge, which ends above in a very blunt tooth or projection. The meso-epinotal suture is narrow but deep. The dorsum of the epinotum is about twice as wide at the base as it is long in the middle. It has in addition to the longitudinal rugae a fine reticulate rugulosity, which is also apparent to some extent on the lateral margins of the dorsum of the pro-mesonotum. The epinotal spines are straight, directed outwards, backwards and upwards, fairly far apart, hardly longer than one-third of the space between them; the declivity of the epinotum is fairly large, feebly concave, smooth and shining. The 1st segment of the finely coriaceous-rugulose and shining petiole is trapezoidal, somewhat wider than long, or perhaps as long as wide, with strongly rounded anterior angles; the 2nd segment deeply and sharply grooved above. The shining abdomen is exceedingly finely coriaceous and almost smooth.

“Loango, West Africa; Sierra Leone.”

The type-species has not been recorded from our region, but is possibly represented by the following variety:

Var. MALEDICTA, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 236, ♂, ♀, 1914.

“♂. 3.3–4 mm. Differs from the type of Mayr by its deeper reddish colour, by the subopaque head, finely but not deeply striate longitudinally. It is smaller and darker than the race *lacustris*, Santschi, which, besides, has not a striated head. The eyes are fairly convex.”

Assuming that the “base” of the dorsum of the epinotum in Mayr’s description is equivalent to the term “apex” (*i.e.* the brow of the declivity) which has been used throughout this work, this form would appear to differ considerably from the type-species in the structure

of the epinotum. In all my specimens the dorsum of the latter is decidedly long (much longer than in *tricolor*, etc.), being as long as wide at the base and two-thirds as long as the width of the apex at the base of the spines. It is fairly flat above. The spines are quite twice as long as their basal width, and not one-third, but at least half as long as the interval between them. The declivity of the epinotum is very slightly inclined and not at all concave. The head is subcircular.

♀. 9.8 mm. Dark castaneous red, the head and petiole a little paler and redder than the thorax; abdomen black. Head longitudinally and closely striate, sparsely but clearly punctured, the space between the frontal area and the anterior ocellus slightly shining, with the sculpture effaced. The thorax in shape, sculpture and gloss closely resembles that of *rufonigra*, but the sides of the dorsum of the epinotum are more parallel. The 1st segment of the petiole has more



FIG. 36.—*C. excisa* var. *maledicta*.

acute anterior angles than that species. Otherwise like the ♀ of *rufonigra*.

C. GODFREYI, Forel.

(As race of *foraminiceps*, Santschi) Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 237, ♂, 1914.

(Race of *vulcania*, Santschi; Forel emend.) Rev. Suisse Zool., vol. 24, p. 406, 1916.

♂. 3 mm. Dark brownish-red, with a tinge of yellow, the back of the head more brown, the legs less reddish than the thorax, the abdomen dark brown, becoming somewhat paler towards the base. Pilosity absent except on the clypeus. Pubescence pale, fairly long, not very abundant except on the abdomen, where it is adjacent (oblique on the head). Head dull, very delicately and longitudinally striate or aciculate, sparsely and finely punctured, the striation more or less effaced in the middle of the vertex. Thorax very finely and superficially reticulate-punctate above, fairly dull, the dorsum of the epinotum with a few transverse rugae. Sides of thorax longitudinally rugulose and partly reticulate-punctate. Abdomen and petiole very slightly shining, the former microscopically alutaceous. Head, excluding the mandibles, quadrate, about as long as wide, the sides

feebly convex, the posterior margin shallowly concave, the posterior angles very little rounded. The scape almost reaches the posterior margin of the head; 3rd-5th joints of the flagellum wider than long, 2nd and 6th as wide as long, club 3-jointed. Eyes placed in the middle of the sides. Mandibles finely striate. Head very little more than one and a-half times wider than the thorax at its widest point. The frontal sulcus is fairly well defined as a narrow and shining impression, reaching the middle of the vertex. Pronotum not marginate behind at the sides, the posterior corners convex. Mesonotum two-thirds longer than its basal width, flat and horizontal or even slightly inclined upwards posteriorly, the median tubercle round and very prominent. The declivity of the mesonotum short, barely marginate at the sides. Meso-epinotal suture narrow and deep. Dorsum of epinotum flat, merging very gradually into the oblique declivity, about twice as wide at its base as it is long in the middle, considerably widened towards the teeth. The latter are very short, hardly as long



FIG. 37.—*C. Godfreyi*.

as their basal width, triangular. The 1st joint of the petiole is a trifle wider than long, the anterior margin straight, the anterior angles widely rounded, the dorsal face almost flat. The 2nd joint is not deeply grooved in the middle, but the posterior margins of the nodal discs are prominent, the sides of the discs not very convex.

King William's Town (Rev. R. Godfrey). (S.A.M., G.A. colls.)

Unwilling as I am to add to the number of species in this confused genus, it nevertheless appears necessary to me to separate this form from *vulcania*, Santschi. I have not seen specimens of the latter, but from Santschi's description and illustrations it is clear that *Godfreyi* is tolerably distinct. In *vulcania* the dorsum of the epinotum is convex, the pro- and mesonotum form a single convexity, the pronotum is marginate at the sides, the mesonotal tubercle is feeble, and lastly, the petiole is differently formed.

Var. *ARNOLDI*, Forel.

(As species) Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 238, ♀, 1914.

♀. 3-3.5 mm. Dark brown, the anterior half of the head sometimes paler or brownish-yellow, mandibles ferruginous. The thorax

is less reddish than in the type-species. The head is more strongly striate and more sharply and less sparsely punctured. The striae are effaced along the middle of the head, which is distinctly shining, the rest of the head being dull. The posterior margin of the head is very slightly concave or almost straight. The thorax appears a little narrower, owing to the mesonotum being less dilated in front and the sides of the dorsum of the epinotum less divergent. The declivity of the mesonotum is shorter than in the type of the species and subvertical, so that the meso-epinotal suture appears much narrower. Epinotal spines variable, like those of the type, or sometimes a little longer, but not more than one-third the length of the space between their bases. The anterior half of the sides of the 1st joint of the petiole, seen from above, are sometimes almost straight, but this character is also variable, as half the specimens before me have the petiole formed exactly as in the type of the species. The sculpture of the thorax is perhaps a shade coarser than in the type.



FIG. 38.—*C. Godfreyi* var. *Arnoldi*.

Durban (H. B. Marley and C. B. Cooper). (S.A.M., R.M., G.A. colls.)

This form, described by Forel as a distinct species, differs very little from *Godfreyi*, i. sp., and merits at the most only varietal rank. The specimens collected by Mr. Cooper are more strongly punctured on the head than the others and are of a slightly darker colour.

Var. FORAMINICIPOIDES, Forel.

Rev. Suisse Zool., vol. 24, p. 406, ♀, 1916.

♂. 3·8–4·6 mm. Black, flagellum and tarsi ferruginous. Mandibles castaneous brown. Pubescence on the abdomen shorter than in the type. Sculpture similar, but stronger everywhere, the head fairly abundantly punctured with small, sharply defined and piligerous punctures. The pro-mesonotal suture is wider and deeper, and the median tubercle of the mesonotum longer and distinctly carinate, shining and more prominent than in the type of the species. The declivity of the mesonotum is vertical, more abruptly delimited from the anterior plane than in the type. The 1st joint of the petiole is more trapezoidal, the sides converging more inwards posteriorly; there is a small and acute tooth on the ventral surface,

quite absent in the type. The 2nd joint has a deeper groove on the node and the abdomen is more shining than in the type.

Bulawayo. (R.M., G.A. colls.)

C. ARBOREA, Smith (*nec* Mayr).

Cat. Hymen. B.M., vol. 6, p. 138, ♀, 1858.

The validity of this species (in regard to which there is considerable confusion) cannot, in my opinion, be maintained. Mayr (Ann. K.K.N.H. Mus., vol. 10, p. 136, footnote) definitely synonymises Smith's species with *tricolor*, Gerst. (= *castanea*, Smith, race *tricolor*, Gerst.). I am in agreement with this view on the evidence of a specimen received in exchange from the British Museum, which had been compared and found to agree with Smith's type by Mr. Meade-Waldo. The specimen in question is a little larger than the average *tricolor*, the spines are somewhat thinner, and the 1st segment of the petiole is a fraction narrower, but otherwise not distinguishable from *tricolor*. On the other hand, Dr. Forel *in litt.* supports the validity of Smith's species, and points out that it differs from *tricolor* in its larger size, the longer epinotal spines, the coarser sculpture, especially on the head, the shape of the petiole, which is less wide in front, and the lateral discs of the 2nd node less separated. These characters certainly hold good in the race *melanogaster*, Emery, but Mayr refers this variety to his own *arborea* and not to Smith's (Ent. Tidsk., p. 251, 1896, footnote).

Smith's description suffers from the vagueness which is characteristic of that author's diagnoses of Formicidae, but serves at least to show not only that the specimen received from the British Museum agrees in the characters tabulated and was therefore correctly identified with Smith's species, but also that Dr. Forel is in error in ascribing a coarse sculpture to *arborea*, Smith. I reproduce Smith's description and the greater part of Mayr's remarks on his own species, from the study of which, together with the characters presented by the race *melanogaster*, Em., one must conclude that Smith's species ought to sink as a synonym of *castanea*, race *tricolor*, Gerst.

(Smith.) "♀. Length 2 lines (4.1 mm.). Pale ferruginous, with very thinly scattered, short, glittering hairs; the head subovate, slightly emarginate behind, *delicately* striated longitudinally, the mandibles with 4 strong acute teeth; the antennae, tarsi and apex of abdomen more or less fuscous. Thorax flattened on the disc, deeply strangulated between the meso- and metathorax, with the latter armed with 2 acute spines. Abdomen: the 1st node of

the peduncle, viewed in front, pear-shaped, with the broad end downwards; the 2nd node ovate, with a deeply impressed line above. Hab., Port Natal."

(Mayr.) *loc. cit.* "Mr. W. F. Kirby sent me for examination a typical example of *C. arborea*, Smith, from the British Museum. This ♂ agrees with *C. tricolor*, Gerst., only the pronotum has more and stronger longitudinal rugae than is the case in the examples in my collection, in regard to which I should say that in many specimens of the latter the longitudinal rugosity is quite obsolete, in some only feebly indicated, and in others quite distinct, so that I do not consider it justifiable to base a variety on the specimen referred to."

C. ARBOREA, Mayr.

Ent. Tidsk., pp. 250-251, 1896.

"Abdomen dark brown, the 1st segment above brighter, especially in front and in the middle. The exerted pilosity is almost entirely wanting, on the ventral surface of the abdomen very sparse, the external margins of the tibiae without exerted hairs; the decumbent pubescence is sparse on the upper surface of the head and abdomen. The head is almost a little wider than long, nearly quadrate, the posterior corners more rounded off than the anterior; it is longitudinally striate near the inner margin of the eyes. Mandibles quadridentate. Clypeus moderately arched . . . its anterior margin fairly straight, without a depression behind. . . . The scape of the 11-jointed antenna extends beyond the posterior margin of the head, all the joints of the flagellum longer than wide. The indistinctly defined frontal area is closely and longitudinally striate like the frons. The eyes are placed distinctly behind the middle of the sides. The pronotum above is somewhat smooth near the suture and has a broad obtuse hump on each side. The mesonotum is feebly arched from side to side and obtusely marginate on both sides. The dorsum of the epinotum has a transverse impression in front of the base of the spines, less distinct in the middle. . . . The 1st segment of the petiole is widest between the anterior and middle third, but yet very little wider there than behind; there is a small and not very evident tubercle on the sides in front of the posterior corners. The abdomen is almost smooth or very delicately rugulose only on the 1st segment, but all the segments are finely coriaceous-rugulose near the posterior margins. The upper surface of the abdomen has piligerous punctures and the 1st segment is broadly truncate at the base."

ARBOREA, Mayr, race MELANOGASTER, Emery.

Ann. Soc. Ent. France, vol. 63, p. 29, ♂, ♀, 1895.

♂. 4.6–5.5 mm. Head, thorax and petiole bright red, abdomen black, antennae and legs dark reddish-brown, the tarsi and articulations of the legs paler. Exserted pilosity sparse, fairly long, present only on the clypeus, pronotum, petiole and margins of the abdominal segments. Decumbent pubescence long and sparse all over except on the flagellum and abdomen. Head dull, strongly, closely and longitudinally rugoso-striate, the striations strongest near the anterior margin. Mandibles longitudinally striate, 4-dentate. Thorax dull, coarsely and irregularly rugose above, the rugae chiefly longitudinal on the mesonotum and dorsum of the epinotum, the spaces between the rugae roughened; the rugae are coarsest on the epinotum. The sides of the thorax longitudinally rugose, the rugae fairly regular and close together. Declivity of epinotum shining and fairly smooth, or with only one or two feeble rugae. Nodes of petiole closely and

FIG. 39.—*arborea*, Mayr, race *melanogaster*, Emery.

longitudinally rugoso-striate, except the dorsal face of the 1st node, which is smooth and slightly shining. Abdomen smooth and moderately shining, the basal half of the 1st segment duller and very finely rugulose in the middle. Head, excluding the mandibles, about one-seventh wider than long, widest behind the eyes, but not much wider behind than in front. The eyes are large, convex and placed behind the middle of the sides. The scape extends well beyond the occipital margin; club 3-jointed, all the joints of the flagellum longer than wide. The pronotum has a distinct subangular and marginate boss on each side behind. The pro-mesonotal suture is wide, much wider than in *tricolor* and other races of *castanea*. Median tubercle of the mesonotum feeble. The mesonotum is one-third longer than wide at the base, feebly marginate at the sides posteriorly, and seen from the side clearly convex, the posterior half or thereabouts sloping downwards to the deep meso-epinotal suture. The dorsum of the mesonotum is plainly higher than that of the epinotum. The latter is fairly flat and not much wider at the apex than at the base, much less rhomboidal than in *castanea* and races. Epinotal spines thin, acute, not very divergent (much less than in *castanea*), nearly three times as long as

their basal width. The 1st segment of the petiole viewed from in front subovate, the anterior margin convex, widest a little in front of the middle, and wider in front than behind. The upper face is as long as wide, feebly tuberculate on each side behind; the ventral surface bears a sharp, vertical tooth. The node of the 2nd segment is one-quarter wider than long, feebly grooved in the middle, the sides only slightly convex. Abdomen truncate at the base, the corners subacute.

“♀. . . . Entirely dark castaneous brown, smooth and shining, the cheeks and clypeus striate; the frons also has some longitudinal rugae; the epinotum is finely striate at the base and on the sides, Head wider than long. Epinotum armed with 2 strong teeth. First node of petiole parallel-sided, bearing a transverse crest behind, ending on each side in a small angular projection; the crest separates a wide anterior plane from a very short posterior one. Second segment convex, without a longitudinal groove. The antennae are much shorter than in the ♂.”

De Aar (Simon); Namaqualand (Peringuey); Willowmore (Brauns); Conway, C.P. (Hewitt). (S.A.M., R.M., G.A. colls.)

Mayr (Ent. Tidskr., p. 251, 1896) remarks that a ♀ of this race, received by him from Prof. Emery, agrees so closely with the type-species that he is unable to discover any substantial difference which would justify the separation of the form even as a variety. Only the transverse impression at the base of the epinotal spines is wanting in that specimen. But even this slight distinction is lacking in some of the specimens which I have seen.

C. PERINGUEYI, Emery. (Plate VI, fig. 83.)

Ann. Soc. Ent. France, vol. 63, p. 27, ♀, ♀, ♂, 1895.

♂. 3·5–5·2 mm. Black, dull, very closely and fairly finely striate longitudinally on the head, more coarsely on the thorax, especially the epinotum. Abdomen shining, smooth, sparsely sprinkled with small, shallow and piligerous punctures. The pilosity is scanty, fairly long and yellowish; pubescence moderately abundant, decumbent and pale yellowish. Head about one-seventh wider than long, decidedly convex above, the sides moderately convex and gradually convergent in front of the eyes, the posterior margin straight. The scape hardly reaches the posterior margin of the head; 2nd–5th joints of the flagellum as long as wide, or a little longer; the club 3-jointed with the joints sharply differentiated. Mandibles strongly and longitudinally striate. Frontal area small but well defined; a shallowly impressed shining line extends from the frontal area to the posterior fifth of the head.

Eyes rather large, placed in the middle of the sides. Width of pronotum a little more than half that of the head. Pronotum rounded at the sides and hind angles, not marginate. Pro-mesonotal suture distinct, fairly deep at the sides. Mesonotum about one-fifth longer than wide at the base, the median carinula not high, extending over the anterior third of the mesonotum. The latter is not marginate at the sides, moderately convex in profile. Dorsum of epinotum twice as wide as long, widening moderately towards the apex, slightly convex lengthwise. The spines are thin, acute, moderately divergent, oblique, and usually half as long as the interval between them; the declivity very smooth and shining. First joint of petiole trapezoidal, about as long as wide in front and not much wider in front than behind, the dorsal face smooth and shining, concave. There is a very small tubercle on each side terminating the upper margin of the sides. Node of 2nd joint grooved longitudinally in the middle, the groove not deep, the discs a little longer than wide.

“♀. 8-9 mm. Very similar to the ♀ in colour, the head is also dull, more sharply striate, thorax shining above, finely striate at the sides, epinotum obtusely bidentate, the 1st segment of the petiole wider, the sides straight, obliquely concave in front, without posterior tubercles, the 2nd segment less deeply grooved. Wings hyaline, the costa pale fuscous.

“♂. 4 mm. Black, head dull, thorax nitidulous, delicately striate, abdomen shining, punctures piligerous and foveiform, antennae 12-jointed, moniliform, the mandibles narrow, acutely tridentate; the 1st segment of the rather short petiole is obliquely truncate in front, the 2nd evenly convex.”

Capetown (Peringuey); Port Elizabeth (Brauns). (S.A.M., R.M., G.A. colls.)

A nest of this species sent to me by Dr. H. Brauns is very much like the one which has been figured and described by Mayr in the Ann. K.K.N.H. Mus. Wien, vol. 16, p. 14, 1901. It consists of an ovoid carton mass, attached to the stems of a reed or grass, of a dark brown colour and pierced by numerous galleries and chambers, and looking, when cut across, very much like a coarse toilet-sponge. The outer surface is composed of less compact material than the inner substance, being in fact a close felt-like layer formed of short pieces of grass. The reed stems pass through the nest near its major axis.

Var. *ANGUSTIOR*, n. v. (= race *cacodaemon*, Forel, pars).

♀. 3.6-4.3 mm. Smaller and narrower than the type-species. The head, excluding the mandibles, is a little longer than wide, the

pronotum is less convex at the sides and longer; it is only twice as wide as long in the middle, excluding the neck (at least two and a-half times in the type of the species). The median carinula of the mesonotum is much more distinct. The dorsum of the epinotum is longer, narrower apically, or about two-thirds wider than long (twice as wide as long in the type-species). The spines are slightly but quite clearly curved inwards.

♀. 9.6 mm. Black, mandibles, flagellum and legs dark reddish-brown. Pubescence fairly long, scanty everywhere. Exerted pilosity pale yellowish, fairly long and sparse. Head closely and longitudinally striate, the striae on the median area of the clypeus converging inwards. Mesonotum and scutellum smooth, shining, very sparsely and shallowly punctured. Dorsum of epinotum strongly rugose transversely. Abdomen and petiole smooth and shining. Head, excluding the mandibles, nearly one-fifth wider than long, the posterior margin straight, the posterior three-fourths of the sides subparallel, the anterior fourth moderately convergent. Thorax



FIG. 40.—*C. Peringueyi*, Forel, var. *angustior*, n.v.

twice as long as wide across the tegulae. Epinotum unarmed, the dorsum four times wider at the base than long; the declivity vertical. First node of petiole trapezoidal, two and a-quarter times wider in front than long in the middle, the anterior angles narrowly rounded. The 2nd node feebly grooved posteriorly, not so wide as the anterior margin of the 1st node. Deälated.

♂. 3.7 mm. Black. Pilosity and pubescence sparser than in the ♀. Head very finely striate, chiefly lengthwise, but behind the ocelli radiating outwards, dull. Mesonotum very finely and closely striate or rugulose longitudinally, the scutellum smooth and shining. The whole epinotum rugulose and only slightly shining. Nodes nitidulous and reticulate. Abdomen smooth and shining. Head a little wider than long, subovate, the outline of the posterior half forming a single convexity. Scape nearly as long as the 1st and 2nd joints of the flagellum taken together; these two are a little wider than long, the 3rd as wide as long, the rest longer than wide. In the single specimen before me, the mesonotum has a median impression in front of the hind margin with a semilunar and raised area on each side of it, but this may be only a teratological feature.

Dorsum of epinotum convex, short, not distinctly delimited from the vertical declivity. First segment of petiole as long as wide, the sides feebly convex and parallel. Second segment transversely ovate, hardly wider than the 1st. Wings hyaline, nervures pale brown.

Durban (C. B. Cooper). (S.A.M., R.M., G.A. colls.; types in my collection.)

As I have remarked on a previous page, *cacodaemon*, Forel, includes two quite distinct forms, those from Willowmore being no more than a slight variety of *castanea*, race *rufonigra*.

Var. GEDEON, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 341, ♂, 1914.

♂. 4.1–5 mm. Very dark reddish-brown. Sculpture stronger than in the type of the species of var. *angustior*. Thorax longitudinally rugose (in one specimen belonging to the same nest the thorax is very distinctly transversely rugose). Median tubercle of mesonotum larger and more prominent than in the type of the species. The sides of the head are less convex, and the 2nd node of the petiole is more deeply grooved in the middle. Otherwise like the type-species.

Pietermaritzburg (R. D. Boyce); New Hanover Rail., Natal (C. B. Hardenburg). (S.A.M., R.M., G.A. colls.)

Var. CACOCHYMA, Forel.

(As race) *loc. cit.*, p. 235, ♀, ♀.

♀. 4.5–5.2 mm. Light reddish-brown, the back of the head and the apical half of the abdomen darker than the rest, mandibles yellowish-red. Pro-mesonotal suture less deeply impressed than in the type-species, sculpture of the thorax a shade stronger, particularly on the epinotum. In all my specimens the mesonotal carinula is as strong as, or even stronger than in the type-species, and the petiole, contrary to Forel's description, is not wider than in the type-species.

“♀. More robust than the type. The mesonotum entirely smooth (partly striate in the type of *Peringueyi*).”

Hab.? ex. S.A.M. coll. (S.A.M., G.A. colls.)

C. CAPENSIS, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 764, ♂, ♀, 1862.

Ann. K.K.N.H. Mus. Wien, vol. 10, pp. 135–7, 1895.

“♂. 4–4.5 mm. Dirty reddish-brown, antennae and abdomen chiefly dark brown; pilosity sparse. Mandibles sharply striate longitudinally; head finely and longitudinally striate above, rugose at the

sides. Thorax finely and longitudinally rugose, constricted between the meso- and epinotum, the latter with two acute spines, directed backwards, upwards and outwards. Petiole shaped as in *C. scutellaris*. Abdomen shining, exceedingly finely rugulose.

“♀. 7–8 mm. Dark reddish-brown, partly brownish-black, particularly the mesonotum; pilosity sparse. Head and petiole as in the ♀. Thorax finely longitudinally rugose; epinotum with two small teeth, wide at their bases. Sculpture of abdomen as in the ♀.

“Cape of Good Hope (Novara).”

The above description is insufficient, but from Mayr's table of South African species in the Ann. K.K.N.H. Mus. the following additional characters may be extracted:

The second segment of the petiole has a deep median groove, and all the joints of the flagellum are as long as, or longer than wide, excepting the third, which is a little wider than long.

Var. CALENS, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 435, ♀, 1910.

“♀. Differs from the type of the species by its spines, which are longer than half the interval between them, and by its entirely brown colour. 3–3.6 mm. (a little smaller than the typical *capensis*).

“Delagoa (Dr. Liengme).”

A co-type of this variety, in my collection, has the head very superficially sculptured or almost smooth, excepting the area between the eyes and the front of the head, which is finely and longitudinally rugulose-striate. In addition, contrary to Forel's statement, the epinotal spines are barely half as long as the interval between their bases.

✓

C. MISELLA, n. sp.

♀. 3.4–3.9 mm. Head, thorax, petiole and antennae reddish-brown, abdomen piceous brown, legs brown with the tarsi a little paler. Pilosity short and scanty, absent except on the clypeus and apical margins of the abdominal segments. Pubescence very sparse, short and decumbent, almost entirely absent on the head and thorax. Head dull, closely and fairly finely reticulate, here and there somewhat reticulate rugulose, the reticulations near the inner margins of the eyes emphasised longitudinally; a longitudinal area on the vertex with the sculpture somewhat effaced and moderately shining. Mandibles dull, strongly striate. Thorax fairly dull, very regularly reticulate, the strands of the reticulation sharply defined and narrower than the spaces which they

enclose, the spaces slightly shining; on the epinotum the reticulation is less sharp, the declivity smooth and shining. Petiole and abdomen shining, microscopically reticulate or alutaceous. Legs fairly shining. Head globose, as wide as long, the sides very convex, the posterior margin straight. Scapes not reaching the posterior margin of the head, falling short of the same by as much as their apical width; 3rd joint of flagellum a trifle wider than long, 4th and 5th at least one-third longer than wide, the club 3-jointed. Anterior margin of clypeus straight. Posterior angles of pronotum submarginate; promesonotal suture obsolete. Mesonotum marginate at the sides, strongly so on the declivous posterior part, which is oblique and about as long as the rest of the mesonotum. The median tubercle fairly prominent and subcarinate. Meso-epinotal suture deep. Dorsum of epinotum convex lengthwise, widened apically. The spines acute, divergent, oblique, half as long as the interval between their bases. The declivity of the epinotum longer than its dorsum. First segment of petiole trapezoidal, the anterior corners widely rounded, the upper



FIG. 40A.—*C. misella*, n. sp.

face concave transversely, as long as wide; 2nd node divided into two discs by a complete median groove. The 1st segment of the petiole bears at its base below a sharp, triangular tooth pointing downwards.

Bulawayo. In hollow stems of *Acacia horrida*. (S.A.M., R.M., G.A. colls.; type in my collection.)

This species is allied to *capensis* in the structure of the antennae, but differs from it and all our other species by the sculpture of the thorax, which consists of a remarkably sharply defined and raised reticulation, the spaces between being smooth and flat. These specimens had previously been named by Dr. Forel as *gallicola*, race *Sjoestedti*, Mayr—quite a different insect, having the 3rd–5th joints of the flagellum wider than long, the sides of the mesonotum not marginate, and a different sculpture.

C. OPACICEPS, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 12, ♀, 1901.

“♀. 3.6–4.2 mm. Dull, clypeus and legs more or less shining, abdomen nitidulous; dark rusty red, the abdomen brown. The

exserted pilosity sparse, the decumbent pubescence more abundant, the scapes and tibiae with short and almost adjacent hairs. Mandibles shining, longitudinally striate and very sparsely and coarsely punctured, with several teeth. Clypeus and cheeks longitudinally rugose, the rest of the head, the thorax and petiole sharply, closely and fairly finely reticulate-punctate, the disc of the pronotum and the dorsum of the epinotum with not coarse longitudinal rugae superimposed, the declivity of the epinotum shining and very superficially reticulate. The abdomen finely rugulose, and also with a few shallow punctures. The head is rectangular, the corners rounded, very little wider than long, anterior margin of clypeus fairly straight, not emarginate. Frontal carinae well developed and of the usual length. The scape of the 11-jointed antenna extends back almost as far as the posterior margin of the head; the 2nd joint of the flagellum is somewhat longer than wide, the 3rd-5th as long as wide, or barely longer, the 6th and following joints all longer than wide, the club distinctly 3-jointed. The shining frontal sulcus is distinct. Eyes placed a little behind the middle of the sides of the head. Posterior margin of the head moderately arcuate. The pro- and mesonotum together, seen from above, reversed trapezoidal, with strongly rounded shoulders, the upper surface of both parts feebly convex; pro-mesonotal suture distinct; mesonotum about as long as wide, not marginate at the sides. The meso-epinotal suture deep; the dorsum of the epinotum horizontal and trapezoidal, shorter than wide behind, the spines moderately long, straight, divergent and oblique. The 1st segment of the petiole trapezoidal, shorter than wide in front, the anterior margin moderately arcuate, the convexity directed forwards, the widely rounded anterior corners ending before the middle of the segment, the upper surface concave in front. The 2nd segment with a sharp and fairly deep longitudinal groove.

“Port Elizabeth” (Brauns).

“The nests are made of carton, of a brownish colour, and attached to the branches of *Erica* and other low shrubs. The surface of the nests (which measure about 10-13 cm. in diameter and 18 cm. long) is rougher and more uneven than those of *Peringueyi*.”

Race DEFLETA, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 434, ♂, 1910.

“♂. 3.1-3.4 mm. A little smaller than the type of the species. The epinotal spines much shorter, hardly half as long, barely longer than a fourth of the interval between them. Pro-mesonotum narrower,

but much more convex, forming an even and strong convexity raised much above the level of the dorsum of the epinotum. The head is a little narrower, more rounded, and the eyes are a little smaller. The abdomen is entirely shining and nearly smooth (densely reticulate and more or less subopaque on the 1st segment in the type of the species). Rusty red; posterior half of abdomen, and sometimes also the head and antennae brown. Otherwise quite like the type, particularly in the sculpture, the petiole and mesonotal carina. *C. opaciceps* is closely allied to *capensis*, Mayr, from which it hardly differs except in the sculpture, which is clearly reticulate-punctate (in *capensis* more striato-rugose).

"Transvaal, in *Acacia horrida* (Dr. C. Keller)."

C. SOLERS, Forel.

Schultze, Reise Süd-Afrika, vol. 4, p. 7, ♀, 1910.

"♀. 4 mm. Mandibles striate. Anterior margin of clypeus straight. Head quadrate, as long as wide, feebly concave behind, the sides convex. Eyes flat, placed barely behind the middle. The scape hardly reaches the posterior margin of the head; club 3-jointed; the middle joints of the flagellum as wide as long. Pro-mesonotum much longer than wide, evenly arched or convex on all sides, not wide in front. When viewed from in front there can be seen a fairly sharply defined, arcuate marginal line on the sides and the front of the pronotum. Disc of mesonotum rounded, as long as wide, without a median carinula, not marginate at the sides. Thoracic emargination (= *meso-epinotal suture*?) sharp, steep, fairly deep, not wide. Epinotum with 2 broad triangular teeth, which are hardly longer than their basal width. First segment of petiole trapezoidal, shorter than wide in front, the anterior margin straight, with rounded anterior angles. Its sides are deeply arcuate-emarginate, so that it presents wide anterior and narrow posterior halves. Second segment much wider than long, divided by a deep median groove into 2 discs. Abdomen of the usual form. The 1st segment of the petiole bears a tooth below. Head very nearly smooth, very finely and sparsely punctured. Clypeus, cheeks and thorax, excepting the smooth declivity of the epinotum and the sides of the pronotum, finely and irregularly rugose lengthwise. Abdomen very finely and superficially coriaceous-rugulose, the petiole somewhat more sharply so. Sparsely pubescent all over, the hairs yellowish and decumbent. Pilose hairs absent except on the clypeus, the apex and ventral surface of the

abdomen. Scapes, tibiae, tarsi and abdomen brown. Head reddish-brown, the rest brownish red-yellow.

“Great Namaland, Arasab River, near Kubub (Schultze); on the bark and in the heart of an *Acacia horrida*.”

✓

C. MONTICOLA, n. sp.

♀. 3·8–4 mm. Ferruginous or reddish raw-umber, the posterior half of the head above, the dorsum of the thorax partially and the apical half of the abdomen darker, or more mahogany brown. Fairly smooth and shining all over, the head sparsely and finely punctured, longitudinally and fairly closely striate at the sides in front of the eyes. The meso- and epipleura longitudinally rugoso-striate, and

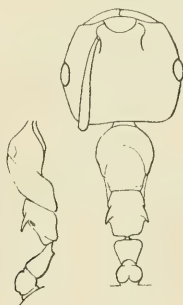


FIG. 40B.—*C. monticola*, n. sp.

partially reticulate-punctate between the striae, the dorsum of the epinotum with a few longitudinal striae at the base. Clothed all over with a fairly abundant, long, silky and whitish pubescence, obliquely exerted; on the head this pubescence is shorter, decumbent and less plentiful. This pubescence, which is only too easily rubbed off, is very striking, and renders this insect tolerably distinct from all our other species of the genus.

Head quadrate, between one-sixth and one-seventh wider than long, the sides distinctly convex, the posterior margin straight. The median area of the clypeus feebly convex, a little longer than wide. The scapes extend beyond the hind margin of the head by about as much as their apical width. Mandibles longitudinally striate and shining. Eyes placed at about the middle of the sides. Posterior half of the lateral margins of the pronotal disc submarginate. Mesonotum feebly convex, as long as wide, without a clearly defined posterior declivity. Meso-epinotal suture shallow. Dorsum of epinotum feebly

convex lengthwise, widened towards the spines, which are divergent, acute, and hardly longer than their basal width. First node of the petiole trapezoidal, about as long as wide in front, the anterior angles rounded. Second node wider than long, with a fairly well-defined median longitudinal groove.

Mountains of Natal, 11,000 ft. (Haviland), *ex* Natal Museum coll. (R.M., G.A. colls.; type in my collection.)

C. SCRUTANS, Forel.

Zool. Jahrb., vol. 29, p. 258, ♂, 1910.

“♂. 2.7–3.3 mm. Mandibles closely striate and sparsely punctured. Head somewhat wider than long, the sides convex, feebly concave behind. Eyes moderately convex, placed in the middle of the sides of the head. The scape extends beyond the occipital margin by a trifle (not as much as one-third of its width); 3rd–5th joints of the flagellum somewhat wider than long. Frontal area and sulcus feebly defined, the latter almost obsolete. Pronotum and mesonotum together form a moderate and elongate convexity lengthwise and transversely; both are only indistinctly and obtusely marginate, without a trace of a median carinula or prominence, the pro-mesonotal suture visible. The meso-epinotal suture forms only a slight, sometimes very feeble constriction of the dorsum of the thorax. The dorsum of the epinotum, distinctly convex lengthwise, is not lower than the mesonotum; it is somewhat wider than long and ends in two short, narrow, divergent and nearly horizontal little spines, which are about one-third the length of the interval between them. Declivity oblique, as long as the dorsum of the epinotum. First segment of the petiole not toothed below, wider than long, trapezoidal, the anterior margin somewhat arcuate (or with bluntly truncated anterior angles). Second node as wide as the 1st, with a complete median longitudinal groove. Abdomen more oval than cordate. Head smooth; only the cheeks in front and the antennal pits rugose. Thorax finely reticulate, with a few weak rugae, less shining than the head. Abdomen and petiole very lightly reticulate, shining. Abdomen with a sparse puncturation. Some isolated yellowish hairs on the body, none on the tibiae and scapes, which have only a decumbent pubescence. The latter is very sparsely distributed on the body. Dull reddish-brown head and abdomen dark brown.

“Nefassit, Abyssinia.

“Near *solers*, Forel, which, however, has almost straight sides to the head, with the latter wider in front, a median prominence on the

mesonotum, a deeper meso-epinotal suture and a longer and narrower 1st segment of the petiole, toothed below, and of a somewhat different shape. Also allied to *Neuvillei*, Forel."

This species has not been recorded from our region, but is represented by the following variety.

Var. *ILGII*, Forel.

Loc. cit., p. 259, ♂.

"Differs from the type-species in the pronotum and mesonotum, which are flatter above and sharply marginate. The epinotal spines are also stouter and the meso-epinotal suture deeper.

"Zoutpansberg."

C. SCHULTZEI, Forel.

Schultze, *Reise Süd-Afrika*, vol. 4, p. 6, ♂, ♀, 1910.

♀. 3.3-3.7 mm. Brownish-reddish-yellow, the front of the head and the petiole paler, the antennae more yellowish-red, abdomen dark brown to blackish-brown. Head and thorax slightly shining, very sharply and longitudinally striate, more closely on the head than on the thorax, the striation of the pronotum somewhat irregular, 2nd node of petiole longitudinally striato-rugulose. Abdomen smooth and shining, finely and very sparsely punctured. Pubescence and pilosity yellowish, sparse, the legs and scapes with only a fine decumbent pubescence. Head quadrate, slightly wider than long, the sides subparallel in front of the eyes and convex behind them, the hind margin feebly concave. Eyes large, convex, and placed at the posterior third of the head. Clypeus slightly impressed in the middle just behind the anterior margin, the latter almost straight. Mandibles striate. Frontal area indistinct, frontal carinae well developed. Antennae unusually long, reaching back as far as the petiole or beyond, the scape extending beyond the occipital margin by quite one-third of its length; all the joints of the flagellum much longer than wide. Posterior lateral angles of the pronotum very prominent, raised above the level of the rest of the pronotum and of the mesonotum. Pro-mesonotal suture ill-defined in the middle, wide and deep at the sides. Mesonotum convex lengthwise, without a distinct declivous face behind, obtusely marginate at the sides. Dorsum of epinotum convex, marginate at the sides, about one-third wider at the base than long. Epinotal spines long, thin, acute, oblique, and about as long as the interval between their bases, with a transverse impres-

sion in front of the latter. First segment of the petiole toothed below, subpyriform (the apex truncate, the broad end anterior), not much wider in front than behind, the sides not very convex, as wide as long; 2nd segment with a shallow median groove, the discs well defined behind, each disc at least half as long again as wide. Abdomen cordate, the apex acute. Legs decidedly long.

"♀. 10.5-11 mm. Near *arborea-melanogaster*, but the back of the head is shining, almost smooth and smaller (narrower than the thorax). Clypeus impressed in front. Dark brown. Head, petiole and patches on the middle of the abdominal segments brownish-red, like the legs and antennae."

Steinkopf, Little Namaland; in nest of *Hamitermes runconifer*, Silv. The subterranean nest was hidden under a stone; also at Kammagas, Little Namaland, one ♀; Prince of Wales's Island (Schultze). (G.A. coll.)

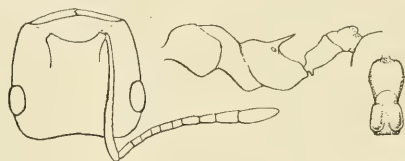


FIG. 41.—*C. Schultzei*, Forel.

C. BUCHNERI, Forel.

Mitt. Schweiz. Ent. Ges., vol. 9, p. 94, ♂, 1894.

"♂. 4-6.5 mm. Mandibles coarsely striate and sparsely punctured. Head noticeably large, somewhat flattened, wider than long, deeply emarginate behind, narrower in front than behind. Anterior margin of clypeus widely and deeply excised in the middle and at the sides. Clypeus fairly flat, not carinate. Frontal area and sulcus deep. Eyes flat, placed at or a little behind the middle of the sides. The scape does not reach quite as far as the hind margin of the head; club 3-jointed, all the joints of the flagellum at least a little longer than wide. Pronotum fairly narrow, and fairly distinctly marginate at the sides. Mesonotum convex, with a high and elongate median carina, obliquely declivous at its posterior extremity, barely marginate laterally. Meso-epinotal suture deep. Epinotal spines broad, moderately long, only slightly divergent, feebly curved downwards, two-thirds the length of the interval between them. First segment of petiole considerably flattened; in the small ♂♂ rectangular, rounded at the corners and longer than wide; in the large ♂♂ as long as wide,

nearly round. Second segment wider than long, widely impressed above posteriorly. Abdomen distinctly flattened, truncate at the base. With a silky gloss, shallowly and sparsely punctured all over; abdomen and legs somewhat more shining. Head and thorax very closely and fairly finely striate longitudinally, with a finer sculpture between the striae; pronotum transversely striate above. The striae on the head diverge posteriorly. Petiole and abdomen finely reticulate-punctate. Legs reticulate, the scape longitudinally striate. Somewhat sparsely clothed all over with yellowish decumbent hairs, the outstanding pilosity very scanty. Scares with short oblique hairs, the tibiae with decumbent hairs only. Reddish-brown. Scares, tibiae, tarsi and vertex darker brown; abdomen more dirty yellow-brown, with darker transverse bands.

“Benguella (Buchner).”

The type-species has not been recorded from our region, but in view of Forel's latest pronouncement in regard to it and several allied forms, I have reproduced the original description.

Dr. Forel (Rev. Suisse Zool., vol. 24, p. 411, 1916) is now of the opinion that the evidence presented by the numerous annectant varieties necessitates the inclusion of the following species as mere races of *Buchneri*: *kasaiensis*, Forel; *vulcania*, Santschi; *impressiceps*, Mayr; *excisa*, Mayr; *impressa*, Emery; *Kohli*, Forel; *Alulai*, Emery; and *Meneliki*, Forel. On the other hand, Santschi has recently raised *africana*, Mayr, var. *bulawayensis*, Forel, to the rank of species; I adopt this arrangement for the present, although it is likely that the discovery of new forms later on may require its being linked again to the race *africana* of *Buchneri* or to the type of the species.

Race *africana*, Mayr, described originally from the Cameroons, has not been recorded within the limits of our region.

C. BULAWAYENSIS, Forel. (Plate VI, figs. 74, 74 a.)

(As var. of race *africana*) Ann. Soc. Ent. Belg., vol. 57, p. 125, ♂, 1913.

(Synonym, *gallicola*, var. *oraclum*) Rev. Zool. Afr., vol. 2, p. 323, ♂, 1913.

♂. 3-4.1 mm. Piceous brown, the anterior half of the head and sometimes the thorax with a reddish tinge; legs brown, flagellum brownish-red, the club (excepting apical half of last joint) paler or yellowish red. Pilosity absent, excepting a few hairs on the clypeus and pronotum. Pubescence very fine and decumbent, almost absent on the thorax and very sparse elsewhere. Head, thorax and petiole

with a slight gloss. Head very finely and closely rugulose, and behind the vertex also microscopically reticulate; the sculpture is more or less effaced on each side of the frontal sulcus, leaving a more shining area which is sparsely and finely punctured. The sculpture around the antennal pits a little stronger. Mandibles dark ferruginous, finely striate and sparsely punctured. Thorax and petiole regularly and finely reticulate, the upper face of the 1st node very superficially sculptured. Abdomen smooth and shining, microscopically alutaceous. Legs smooth and shining. Head a trifle wider than long, the sides feebly convex, the posterior margin very shallowly concave in the middle. Frontal area distinct, the frontal sulcus more or less clearly defined and ending beyond the middle of the head. The scape falls short of the occipital margin by about the length of the eye. Second joint of the flagellum as wide as long, 3rd-5th wider than long. Posterior corners of pronotum slightly tumid, not marginate. Promesonotal suture fairly deep and wide at the sides,



FIG. 42.—*C. bulawayensis*, Forel.

very shallow across the middle third. Median tubercle of mesonotum very prominent, elongate but hardly carinate. Declivity of mesonotum oblique, obtusely marginate at the sides, forming one-third or less of the mesonotum; the latter is about one and a-half times longer than wide at the base. Meso-epinotal suture deep. Dorsum of epinotum much wider than long, widening towards the apex, distinctly convex at the base when seen in profile, its sides external to and not continuous with the outer margins of the epinotal teeth. The latter divergent, short, very little longer than their basal width, subtriangular. First segment of petiole trapezoidal, as long as wide in front, or a little longer, the anterior corners fairly angular, the anterior margin straight, the ventral lamella ending in front in a small tooth. Node of 2nd segment wider than long, divided by a shallow longitudinal groove which is deeper behind, the posterior margins of the discs prominent.

Bulawayo. (S.A.M., R.M., G.A. colls.)

I am obliged to unite to this species the var. *oraclum*, Forel, of *C. gallicola*, Forel. Apart from the smaller size and paler colour, there are no differences of any value. It is true that in some of the specimens (no. 30) determined by Dr. Forel as *oraclum* the mesonotal

declivity is more oblique and less abrupt above, but in looking through a large series a complete gradation will be found between one extreme and the other.

Var. RHODESIANA, Forel. (Plate VI, figs. 82, 82 a.)

(*C. inermis*, Mayr, race *delagoensis*, var.) Ann. Soc. Ent. Belg., vol. 57, p. 126, ♂, 1913.

This variety must be removed from the *inermis* group, to which it bears a superficial resemblance in the sculpture and shape of the petiole. It differs from it quite clearly by the presence of distinct epinotal teeth and by the shape of the mesonotum. It is exceedingly closely allied to *bulawayensis*, i. sp. From the latter it differs as follows:

The size is greater, 3·2–4·4 mm. The head is duller and more densely rugulose. The thorax is also duller and has a very close and



FIG. 43.—*C. bulawayensis*, Forel, var. *rhodesiana*, Forel.

somewhat coriaceous reticulate sculpture, over which is superimposed a sparse and longitudinal rugosity; the epinotal teeth are more robust.

Bulawayo; Victoria Falls. (S.A.M., R.M., G.A. colls.)

The specimens from the Victoria Falls have the middle of the head a little more shining, and the meso-epinotal suture deeper and narrower.*

Var. DESPERANS, Forel.

(*C. gabonensis*, Em., var.) Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 233, ♂, 1914.

♂. 3·2–4 mm. Reddish-brown, the thorax and petiole paler, the basal third of the abdomen paler than the apex, the anterior third of the head more yellowish-red; flagellum ferruginous, tarsi brownish-ochreous. Pubescence long, decumbent, pale whitish-yellow, fairly abundant all over, on the abdomen very abundant and sparse on the legs. Sculpture of head and thorax like that of the type of the species but a little stronger, the surface duller. Petiole closely reticulate-punctate and

* The profile figure in Plate VI is inaccurate, the convexity of the mesonotum having been somewhat exaggerated. For this reason I add a corrected drawing in Text-fig. 43.

dull. Abdomen microscopically rugulose and dull, fairly closely and finely punctured. Head more deeply marginate behind than in the type-species, the scapes as long as in the type-species or very little shorter. Thorax resembling that of the type-species, but the pronotum is subvertical in front, the junction of the vertical and horizontal faces rounded; the declivity of the mesonotum is shorter, less oblique, fairly distinctly marginate at the sides, the margins ending in front in a subdentate prominence. The dorsum of the epinotum is relatively longer and flatter than in the type, and also less widened towards the apex; it is as long in the middle as it is wide at the base. First segment of petiole as wide as long. Node of 2nd segment a little narrower in front than behind, one-third wider than long. Otherwise like the type-species.

Durban. (S.A.M., R.M., G.A. colls.)

Apart from the shape of the dorsum of the epinotum and the deeper occipital emargination, this form differs but little except in size from the type of the species. It has no relationship whatever to *gabonensis*,



FIG. 44.—*C. bulawayensis*, Forel, var. *desperans*, Forel.

Emery, in which species the 2nd node is entire, without a median groove or even a posterior emargination. Moreover, in *gabonensis* the spines are nearly as long as the dorsum of the epinotum, and the sculpture is of a different character.

Race INFACETA, Santschi.

Ann. Soc. Ent. France, vol. 84, p. 498, ♀, 1916.

♀. 3.6–5 mm. Black, tarsi brown, mandibles dull ferruginous, antennae reddish-brown, the scapes and flagellum darker towards the apex. Sculpture similar to that of the type-species but stronger. The striae on the head become increasingly oblique posteriorly and near the posterior angles are directed outwards, or almost transverse. The smooth median area is wider (covering about one-third of the diameter of the vertex) and more strongly punctured. The dorsum of the epinotum is very sharply reticulate, with a few oblique and fine rugae near the base. The sides of the pro- and epithorax more coarsely sculptured than in the type of the species. First abdominal segment very finely punctured. The frontal area and sulcus more clearly defined than in the type of the species. The scape extends back

as far as the posterior margin of the head. The posterior corners of the pronotum more tumid than in the type-species, the pro-mesonotal suture deeper and wider, especially at the sides.

This race differs from the type-species chiefly in the structure of the mesonotum and epinotum. The declivity of the former is vertical, forming an abrupt angle with the upper plane, sharply marginate at the sides, the margins extending forwards almost as far as the pro-mesonotal suture and produced at the junction of the two planes into a small dentiform projection. The meso-epinotal suture is much deeper than in the type. The dorsum of the epinotum is strongly convex at the base, the convexity starting at the suture; the teeth are longer, and directed more upwards. The 1st segment of the petiole is a little longer, and the median groove of the second is deeper. Otherwise similar to the type of the species.

Victoria Falls. Nesting in a hollow branch of a *Combretum*. (R.M., G.A. colls.)

Race INFACETA, var. PUDICA, Santschi.

Loc. cit., p. 499.

♂. 3.1–4.8 mm. Differs from the race in the following characters: The colour of the head, thorax and petiole is paler, of a dark reddish-brown. The sides of the head are less convex. The anterior plane of the mesonotum is merely obtusely marginate at the sides, and the pro-mesonotal suture is shallower and narrower at the sides. In the larger specimens the dorsum of the epinotum is transversely rugose. The epinotal spines are somewhat shorter than in the race, except in the larger ♀♀.

Victoria Falls. (S.A.M., R.M., G.A. colls.)

C. KNERI, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 762, ♀, 1862.

♂. 4–5 mm. Head and abdomen ochreous-red, the abdomen darker and more brownish. Thorax and petiole reddish-yellow. Mandibles, anterior margin of the head, flagellum and tarsi fuscous-ochreous, scapes, tibiae and femora brownish-ochreous. Pubescence pale, whitish-yellow, short, decumbent, scanty on the head and almost wanting on the thorax. Erect pilosity sparse, occurring only on the clypeus, pronotum, petiole and ventral surface of abdomen. The fundamental sculpture of the head and thorax is a fine, dense and rather superficial reticulation. On this is superimposed a coarser sculpture as follows: Anterior half of head from the cheeks to the

frontal carinae and including the clypeus longitudinally striate, the rest longitudinally rugulose, a narrow area on each side of the frontal sulcus nearly smooth and shining, with a row of 6 or 7 piligerous punctures. Thorax longitudinally rugulose, with a few stronger rugae on the pronotum and dorsum of epinotum. Sides of prothorax and epithorax moderately shining and reticulate-rugulose, sides of mesothorax strongly reticulate-punctate and dull. Petiole very lightly reticulate above. Abdomen smooth and shining. Head a little wider than long, not much wider behind than in front, the sides moderately convex, the posterior margin widely but not deeply concave. The scape reaches the hind margin of the head; all the joints of the flagellum longer than wide, the 1st joint shorter than the 2nd and 3rd together, the club 3-jointed. Anterior margin of clypeus almost straight in the middle. Frontal area and sulcus well defined. Eyes placed a little behind the middle of the sides. Pronotum and mesonotum marginate all round, the margin continued on to the epinotum and joining the lower margin of the spines. Pronotum with a wide and shallow median longitudinal impression, the posterior corners



FIG. 45.—*C. Kneri*, Mayr.

fairly prominent. Pro-mesonotal impression wide, fairly deep at the sides. Mesonotum three-fourths longer than its basal width, furnished with an elongate tubercle or carinula in front, the posterior declivous face forming a little more than one-fourth of its whole length, oblique and merging gradually into the anterior plane. Seen from the side, the profile of the mesonotum forms a continuous convexity, and is distinctly higher than the dorsum of the epinotum. Meso-epinotal suture deep. Dorsum of epinotum very slightly convex lengthwise, trapezoidal, widened towards the apex, its lateral margins continuous with the upper margins of the spines. The latter are long, thin, acute, widely divergent and oblique, longer than the dorsum of the epinotum and as long as the interval between their bases. Declivity of epinotum smooth and shining. First segment of petiole subcordate, wider than long, the anterior angles widely rounded and somewhat raised, the upper face shallowly concave transversely. The sides of the segment are much less sharply bevelled than in the preceding species. Node of 2nd segment oblongo-ovate, one and two-thirds as wide as long, without a median groove. Abdomen one-fourth longer than wide, rather convex above transversely.

♀. 10.1 mm. Reddish-brown, the anterior half of the head, the paraptera, the base of epinotum and 1st segment of petiole paler or yellowish red-brown; abdomen dark brownish-red, antennae, mandibles and tarsi dull ochreous, femora and tibiae brownish-ochreous. Pilosity and pubescence as in the ♂. Head longitudinally striate, the striae more or less effaced between the frontal area and the ocelli, that area being more or less shining, sparsely and strongly punctured. Mandibles striate, sparsely punctured between the striae. Anterior margin of clypeus with a row of large punctures. Mesonotum and scutellum smooth and shining, with some sparse, evenly distributed and fairly large punctures. Dorsum of epinotum dull, transversely striato-rugulose. Petiole: 1st segment very finely rugulose and dull, 2nd segment slightly shining, feebly rugulose and sparsely punctured. Abdomen smooth and shining, sparsely punctured, the punctures small and piligerous. Head widest behind, one-fifth wider than long, the posterior margin straight, the angles narrowly rounded. Frontal area scutiform and well defined, the frontal sulcus deep and ending at the anterior ocellus. Eyes convex, placed at the middle of the sides. Scapes not quite reaching the posterior margin of the head. Mesonotum not so narrow as in *tricolor* and allied forms, as wide as long, scutellum (excluding the paraptera) half as long as the mesonotum, its hind margin semi-circular. Dorsum of epinotum four times wider at the base than long, ending on each side in a stout, horizontal, and triangular tooth; the declivity vertical, shining and smooth. First segment of petiole more or less trapezoidal, one-third wider in front than long, the anterior angles subacute; node of 2nd segment one and a-half times wider than long, widest in front, with pronounced anterior angles, the posterior margin slightly concave in the middle. Wings hyaline, nervures and stigma dark yellow.

Bothaville, O.F.S. (Brauns). (G.A. coll.)

Var. *AMITA*, Forel. (Plate VI, fig. 75.)

Ann. Soc. Ent. Belg., vol. 57, p. 125, ♀, 1913.

♀. 3.5-4.3 mm. Dark-brown, the base of the abdomen paler. Legs pale-brown, tarsi and flagellum reddish-ochreous. Pro-mesonotal suture much deeper than in the type-species, the mesonotal median carinula much more prominent and longer, extending back as a raised line as far as the brow of the declivous face; the latter less oblique than in the type. The dorsum of the epinotum has a deep, median and longitudinal impression, which is barely indicated in the type. The posterior margin of the head is less emarginate. I am unable to

recognise the other differences indicated by Forel. The petiole is precisely similar to that of the type, and the sculpture is quite as strong.

Bulawayo. (S.A.M., R.M., G.A. colls.)

Var. *MATABELE*, n. v.

♀. 4.1–5.2 mm. Head and thorax of a warm reddish-brown, abdomen piceous, legs dark brown, the articulations, tarsi, flagellum and mandibles reddish-ochreous. Very similar to var. *amita*, but differing from it in colour, size, and also in the following characters. The fundamental reticulate sculpture of the thorax is much sharper and more coarse. The superimposed rugae on the pronotum finer and less regular than in *amita*. The pro-mesonotal suture is considerably wider and deeper, and joins in the middle a longitudinal impression which divides the pronotum into two (visible also in *amita*, but much less distinct). The anterior plane of the mesonotum, seen from above, is almost pentagonal in outline, the posterior half of the sides sharply marginate, the declivous plane also marginate,



FIG. 46.—*C. Kneri*, Mayr, var. *matabele*, n. v.

longer and steeper than in *amita* (in some specimens almost vertical). The median tubercle is also more sharply carinate and longer than in *amita*. The epinotal spines are as long as in the type-species, less divergent and directed more upwards than in *amita*. The median longitudinal impression on the dorsum of the epinotum is even stronger than in that variety.

Hillside, Bulawayo. Nesting under a stone. (S.A.M., R.M., G.A. colls.; type in my collection.)

Not unlike *C. Bequaerti*, Forel, from which it appears to differ by the weaker sculpture, the much smaller eyes and the pro-mesonotal suture, which is very wide and deep at the sides.

Race *HOTTENTOTA*, Emery.

Ann. Soc. Ent. Belg., vol. 43, p. 482, ♀, 1899.

♀. 3–3.9 mm. Head and thorax varying from a dull ochreous yellow to dark yellowish or reddish-brown, the anterior third of the head usually paler. Abdomen dark brown, becoming paler or more reddish-yellow towards the base. Antennae, legs and mandibles dark ochreous, the tibiae and femora more or less brownish-yellow. Pubescence

much shorter and a little less abundant than in the type-species. Head smooth and shining, very finely and sparsely punctured, the anterior third, including the clypeus, duller, finely, and very superficially striate longitudinally. Mandibles dull, densely striate. Thorax with a weak fundamental reticulation, with a few longitudinal rugae superimposed; these are strongest on the dorsum of the epinotum. Thorax moderately shining. Petiole very superficially coriaceous and rugulose, the upper face of the 1st node shining, the 2nd slightly so. Abdomen smooth and shining. Head a trifle wider than long, the posterior margin almost straight, the posterior angles much more widely rounded than in the type-species. Frontal area and sulcus shallow and indistinct. Head twice as wide as the pronotum. The latter is much less clearly marginate at the shoulders than in the type-species, and is not marginate at all in the middle in front, the upper surface merging into the neck by a gradual curve (in the type-species almost vertically truncate in front). The posterior angles of the pronotum not tumid as in the type-species. The promesonotal suture very shallow, nearly obsolete in the middle. Seen in profile, the pro- and mesonotum form an almost continuous convexity, the mesonotum hardly higher than the pronotum, its declivity much more oblique and gradual than in the type-species. The median carinula weaker, the sides of the declivity less strongly marginate. The epinotum similar to that of the type-species, but the spines are more horizontal and shorter, barely longer than the dorsum of the epinotum, about twice as long as they are wide at the base. First segment of the petiole a little wider than long, trapezoidal, the anterior angles somewhat raised, slightly concave transversely. Node of 2nd segment transversely oblong, not grooved in the middle, the sides much less convex than in the type-species, the posterior margin feebly indented in the middle. Abdomen narrower than in the type-species, one and a-half times longer than wide.

Bedza and Springvale, S. Rhodesia; Sipapoma, S. Rhodesia.

The latter are somewhat intermediate in structure, the 1st segment to the petiole being nearly half as wide again as long, and the pronotum less obliquely curved in front.

(S.A.M., R.M., G.A. colls.)

C. GAMBIENSIS, Andre.

Rev. d'Ent., vol. 8, p. 228, ♀, 1889.

“♀. 3.5–4.5 mm. Head wider than long. Antennae 11-jointed, club 3-jointed; scape short, not reaching the posterior margin of the

head. Eyes placed in the middle of the sides of the head. Mandibles sharply striate longitudinally. Clypeus and front of the head longitudinally striate, very superficially so on the former; the rest of the head smooth and very shining. Pronotum and mesonotum very feebly marginate at the sides; pronotum only slightly depressed, very rounded at the shoulders; mesonotum without a median carina, separated from the pronotum by a feebly marked depression; mesoepinotal suture deep; epinotum armed with 2 short, stout spines, not very acute, feebly divergent and shorter than the interval between their bases. The thorax is smooth and very shining, except the sides of the meso- and epinotum and the dorsum of the latter, which are longitudinally rugose. First segment of the petiole longer than wide, trapezoidal, a little wider in front than behind, the anterior angles rounded; 2nd segment transversely oval, neither grooved nor emarginate above. The 2 nodes are superficially rugose and shining. Abdomen smooth and very shining. Pubescence fine, short and very scanty, almost absent on the head, a little more abundant on the abdomen. Scapes and tibiae without erect hairs. Varying from ferruginous to reddish-brown; the legs often paler; abdomen blackish-brown, often reddish at the base.

“Gambia.”

Var. *KRANTZIANA*, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 234, ♀, ♂, 1914.

“♀. 3.6–4.5 mm. The spines are slender and much longer than in the type-species, three-fourths as long as the interval between them. The petiole is also wider in front and the anterior angles more rounded. The colour is paler and duller, and the 1st abdominal segment is entirely yellowish. Otherwise like the type of André, which is in my possession.”

♀. 9.2 mm. (hitherto undescribed). Dark reddish-ochreous, the ocellar area, two longitudinal bands on the parapsidal sutures, the middle third of the abdominal segments and the apex of the abdomen more or less reddish-brown. Head dull, very finely striate longitudinally, the striae almost effaced behind the ocelli. Mesonotum and scutellum nitidulous, smooth, sparsely and feebly punctured. Dorsum of epinotum transversely rugose and dull. Petiole dull and very finely coriaceous. Abdomen smooth, not very shining. Head quadrate, parallel-sided, or very little narrower in front than behind, the posterior margin straight, the posterior angles narrowly rounded. Mesonotum one-fourth longer than wide, two and a-half times longer

than the scutellum; the posterior margin of the latter semicircular. Dorsum of epinotum convex lengthwise, three times wider than long in the middle, armed with 2 acute and small triangular teeth; the declivity subvertical. Petiole as in the ♀, but the anterior angles of the 1st segment less rounded. Abdomen with subacute lateral angles at the base. Wings hyaline, slightly tinged with yellow, nervures and stigma dark ochreous.

♂. 4 mm. Dark brown, petiole and abdomen paler than the thorax; legs, mandibles and antennae dark ochreous-yellow, the legs also somewhat brownish. Shining. Head finely striate longitudinally. Mesonotum very finely striate in the middle, the striae on each side converging posteriorly. Scutellum very finely striate at the sides and in the middle, with a broad and shallow transverse impression at the base. The scape as long as, or a little longer than the 1st joint of the flagellum; the latter as long as wide, the 2nd-5th joints wider than long, the remaining joints very little longer than wide. First segment of petiole a little longer than wide, the sides subparallel, the anterior face oblique and hardly longer than the upper face; 2nd segment subcircular, not very convex above, barely wider than the 1st. Wings with pale yellow nervures.

Krantz Kloof, Natal (H. W. B. Marley). (S.A.M., R.M., G.A. colls.)

The ♀ has a sharp tooth below the 1st segment of the petiole as in race *hottentota* of *C. Kneri*, to which this variety appears to be closely allied. Apart from the greater size, the only appreciable differences lie in the wider head, shallowly but distinctly emarginate behind, the more clearly marginate thorax, the longer spines and the wider 1st segment of the petiole. The sculpture of the thorax is also a little finer than in *hottentota*, and the surface duller.

C. GALLICOLA, Forel.

Mitth. Schweiz. Ent. Ges., vol. 9, p. 95, ♀, 1894.

“♀. 2.2-3 mm. Mandibles striate. Clypeus without a carina; the anterior margin not emarginate in the middle. Head rectangular, the angles rounded, somewhat longer than wide, with convex sides. Eyes placed a little behind the middle of the sides. The frontal sulcus is continued very shallowly as far as the posterior margin of the head, the latter slightly emarginate. The scape does not reach quite as far as the posterior margin. Club of antenna almost 2-jointed in the ♀ major, 2-jointed only in the ♀ minor; 2nd-5th joints of the flagellum wider than long. Pronotum barely marginate at the

sides, the mesonotum not at all. The latter has an elongate, median tubercle. Meso-epinotal suture narrow and deep. Epinotal teeth short, as long as two-fifths of the interval between them. First segment of petiole with a very short and blunt tooth below in front, much the same as in *C. scutellaris*; somewhat wider than long. Second segment with a complete median groove and 2 not very projecting discs. Abdomen cordate. ♀ minor shining, lightly reticulate, distinctly but sparsely and finely punctate, the abdomen and back of the head nearly smooth, the cheeks sparsely striate. ♀ major less shining, more sharply reticulate all over, the head in greater part very finely and closely striato-rugulose and reticulate, with shallow and widely spaced punctures which are distinct and abundant. Pubescence very fine, scattered. Pilosity almost entirely wanting, except on the ventral surface. ♀ major, brownish-black, mandibles, cheeks, club of antenna and articulations of the legs dark yellowish-red. ♀ minor, yellowish or dark yellowish-brown, posterior half of the abdomen blackish-brown.

"Delagoa, in a gall (Dr. Liengme)."



FIG. 47.—*C. gallicola*, Forel.

The ♀♀ before me are all small examples, 2.4 mm. or less, derived from an incipient nest. In these the head is as wide as long, excluding the mandibles. Frontal area feebly defined. The 2nd-7th joints of the flagellum wider than long. The pro-mesonotal suture is very shallow but fairly visible. The declivity of the mesonotum is quite two-thirds as long as the anterior plane, and the latter has a rounded tubercle in front. The 1st segment of the petiole is as long as wide, with the anterior angles somewhat obtusely truncate.

Apart from these slight differences these specimens agree fairly well with Forel's description; they have also been determined as *gallicola* by Dr. Santschi.

♀. 8 mm. (hitherto undescribed). Blackish-brown, tarsi and flagellum ferruginous, mandibles castaneous red. Erect pilose hairs very sparse on the abdomen, and almost entirely wanting elsewhere. Pubescence moderately plentiful, decumbent; fairly long on the legs and antennae. Sides of the head, in front of the eyes, finely and longitudinally striate, behind the eyes very superficially rugulose and feebly punctured, moderately shining. Clypeus nearly smooth in the middle. Mandibles coarsely striato-punctate. Mesonotum and scutellum

very smooth, shining, finely and sparsely punctured. Epinotum faintly rugulose above and at the sides, the declivity smooth and shining. Petiole and abdomen smooth, shining, very minutely and sparsely punctured. Head subquadrate, as long as wide behind, slightly narrowed in front, the posterior angles narrowly rounded, the hind margin straight. Frontal area well defined, longitudinally striate. Head very little wider than the thorax across the tegulae. Scutellum half as long as the mesonotum. The dorsum of the epinotum very short, joining the vertical declivity in a very short curve. First segment of petiole subquadrate, a little wider in front than behind, nearly one-third wider than long, the anterior two-thirds semicircularly bevelled. Second segment subglobose, a little wider than long, the posterior margin feebly emarginate in the middle. Deälated.

Somabula, S. Rhodesia; in a gall, 1 ♀, 14 ♂ ♂. (R.M., G.A. colls.; type of ♀ in my collection.)

Race LATRO, Forel.

Schultze, Reise Süd-Afrika, vol. 4, p. 6, ♂, 1910.

“♂. 3.3-3.7 mm. Like the type of the species, but larger. Entirely yellowish-brown. The 1st segment of the petiole wider than long, feebly arcuate in front (in the type of the species as long as wide, the anterior margin straight).

“Between Kgokong and Kang, Kalahari (Schultze); in gall-like swelling on the branches of an *Acacia*, in company with Aphides.”

C. TRANSVAALENSIS, Forel.

Mitth. Schweiz. Ent. Ges., vol. 9, p. 96, ♀, 1894.

“♀. 2.7-2.8 mm. Mandibles smooth, shining, quadridentate. Clypeus fairly flattened, impressed in the middle anteriorly. Head rectangular, with the angles rounded, somewhat wider behind. Eyes large, placed at the posterior third. Club of the antenna 2-jointed; the scape reaches the posterior margin of the head. Pronotum fairly distinctly marginate at the sides, with a little longitudinal carina in the middle. Pro-mesonotal suture barely visible. Mesonotum without a median carina, marginate at the sides behind, the declivity short and oblique. Meso-epinotal suture not deep. Dorsum of epinotum marginate, wider behind than in front. Epinotal spines short. First segment of petiole, seen from above, almost quadrate, higher behind than in front, with 2 quite small and blunt denticles or corners behind, below toothed in front, the tooth short, thick, obtuse

and continuous with its lower surface. Second segment of petiole somewhat wider than long, as wide as the 1st, quite round, without a trace of a median groove or impression. Cheeks, sides of the clypeus, a part of the sides of the frons finely and longitudinally striate, reticulate between the striae. The rest of the head, the abdomen, 2nd segment of petiole, a part of the mesonotum and sides of the pronotum smooth, shining, sparsely and finely punctured, with a mere trace of a reticulate sculpture here and there. The rest of the thorax closely and not very finely punctate-reticulate and fairly dull; 2 or 3 longitudinal rugae on the pronotum. First segment of petiole reticulate. Erect pilosity sparse and fairly coarse. The hairs are somewhat truncate and clavate as in *Leptothorax*. Pubescence decumbent and very scanty. The tibiae and femora with only decumbent hairs. Dark castaneous brown. Mandibles, antennae and tarsi reddish-yellow. Legs and club of antennae more brownish.

“Transvaal (Rev. P. Berthoud); Capetown and Vrijburg (Simon).”

Var. HAMMI, n. v.

♂. 2.4 mm. Pitch black, legs and antennae brownish. The whole thorax, including the declivity of the epinotum, and the sides

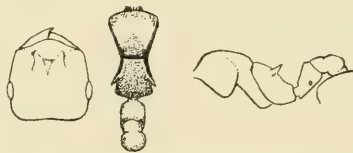


FIG. 48.—*C. transvaalensis*, Forel, var. *Hammi*, n. v.

of both segments of the petiole, very sharply reticulate, the meshes wide and shining, the strands thin and trenchant. The reticulation is strongest on the epinotum, more superficial and closer on the mesonotum. The pro- and mesonotum are also finely rugoso-striate longitudinally. The declivity of the mesonotum distinctly marginate at the sides, the margins being continued over the dorsum of the epinotum and along the inner side of the spines. The latter are not very short, quite half as long as the interval between their bases. The 1st joint of the flagellum is as long as the 2nd–4th taken together, the 3rd, 4th and 5th a little wider than long, the 2nd and 6th a trifle longer than wide. Erect pilosity whitish, fairly long.

(S.A.M., R.M., G.A. colls.; type in my collection.)

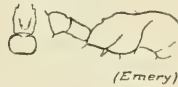
I have much pleasure in naming this variety in honour of my friend, Mr. A. H. Hamm, of the Hope Museum, Oxford.

C. CONSTRUCTOR, Emery.

Ann. Soc. Ent. France, vol. 63, p. 29, ♀, 1895.

“♀. 3-3.5 mm. Piceous, nitidulous, sparsely pilose, erect hairs absent, head subglobose, finely striate in front; the scape of the 11-jointed antenna reaches back beyond the occipital margin, the club indistinctly 3-jointed; thorax short and thick, not marginate, pronotum obtusely bigibbose, mesonotum moderately convex, declivity of the epinotum large, very smooth, forming an obtuse angle with the dorsum, the latter fairly round, with a short tooth on each side; sides of the first segment of petiole bisinuate, slightly narrower behind, impressed in the middle above, the 2nd segment very shallowly impressed. Hammans Kraal (Simon). Makes carton nest in trees.”

“ . . . In the shape of the epinotum, which is almost devoid of spines, this ant recalls *C. inermis* and allied forms, from which it is quite distinct in not having the 1st segment of the petiole trapezoidal.

FIG. 49.—*C. constructor*, Emery.

The sculpture is feeble, so that the greater part of the head is shining, not showing puncturation or longitudinal striation except under a very high magnification. The thorax is a little duller, except the declivity of the epinotum, which is smooth above, faintly punctured and slightly concave below, longer than the dorsum, from which it is separated by a much-rounded angle. The mesonotum is uniformly convex, separated from the pronotum by a shallow suture, which emphasises 2 not very prominent bosses formed by the lateral portions of the pronotum. The 1st segment of the petiole is hardly wider in the middle than in front or behind, the anterior angles well defined; it is longer than wide, and shallowly excavated in the middle above, . . .”

Var. KIRBYI, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 10, p. 137, ♀, 1895.

“This variety differs from the type of the species by the presence of epinotal spines, which are directed somewhat outwards and upwards, and are about half as long as the width of the epinotum at the meso-epinotal suture.

“S. Africa.”

C. MURALTI, Forel, race *LIVINGSTONEI*, Santschi.

Ann. Soc. Ent. Belg., vol. 54, p. 432, ♀, 1910.

(Race) Bull. Soc. Vaud., vol. 52, p. 344, ♀, 1919.

♀. 2.2–2.4 mm. Piceous, legs, antennae and mandibles brownish-yellow. Shining, the pronotum, sides of mesonotum and mesopleurae less shining than the rest of the body. Pubescence very scanty on the thorax, and fairly so elsewhere, composed of thin, decumbent and yellowish hairs. Erect pilosity yellowish, absent from the head except on the clypeus, very sparse on the thorax and petiole, a little more abundant on the abdomen, where they are slightly clavate and truncate. Head smooth, finely and very sparsely punctured, microscopically aciculate at the sides in front of the eyes. Pronotum and sides of the mesonotum sharply and finely striate longitudinally, the striae very regular, the middle of the mesonotum smooth. Dorsum of epinotum



FIG. 50.—*C. muralti*, Forel, race *livingstonei*, Santschi.

with a few short striae on each side and a fairly discrete reticulate patch in the middle, the declivity almost smooth, at the most only very superficially reticulate. Nodes and abdomen smooth and shining, the dorsal surface of the 1st node slightly duller and very superficially coriaceous. Head as wide as long, narrowed a little in front, the sides moderately convex, the posterior margin shallowly concave. Eyes small, flat, placed just behind the middle of the sides. The scapes do not extend beyond the posterior sixth of the head; 2nd-7th joints of the flagellum at least twice as wide as long, club 2-jointed or indistinctly 3-jointed. Mandibles smooth, shining, 4-dentate. Clypeus transversely impressed behind the anterior margin of the median area. Pro-mesonotum, seen from above, reversed pyriform, the apex (*i. e.* meso-epinotal suture) broadly truncate. Pro-mesonotal suture obsolete, meso-epinotal fairly deep and narrow. Declivity of the mesonotum marginate at the sides and merging into the anterior plane by a low curve. Dorsum of epinotum submarginate at the sides, very short, much wider than long, delimited from the declivity only by the difference of the sculpture. Epinotal teeth triangular, short, erect,

acute and compressed; the declivity concave lengthwise, at least three times longer than the dorsum. First segment of petiole with the sides parallel or only feebly convex, almost one and a-half times longer than wide, the dorsal face not excavated, if anything a little convex transversely, with a minute tooth on each side in front of the posterior margin; node of 2nd segment subglobose, without a trace of a median groove or posterior emargination.

Livingstone, N. Rhodesia. On the trunks of a tree. This locality is just outside the limits of our region, but it is most probable that the species will be found to occur also on the south side of the Zambesi. (S.A.M., R.M., G.A. colls.)

C. SORDIDULA, Nylander.

Act. Soc. Fenn., vol. 3, p. 44, ♀, 1849.

Mayr, Verh. Zool. Bot. Ges. Wien, vol. 5, p. 472, ♀, 1855.

Forel, Mitth. Schweiz. Ent. Ges., vol. 3, p. 308, ♂, 1870.

The type-form of this species is distributed, together with numerous varieties, over the southern Palaearctic region; it is represented in our region by the following forms:

Var. *RECTINOTA*, Forel. (Plate VI, fig. 73.)

Ann. Soc. Ent. Belg., vol. 57, p. 126, ♀, 1913.

♀. 1.8-2.1 mm. Pale ochreous-yellow, the head reddish to brownish-ochreous, the 1st segment of the abdomen entirely pale ochreous or sometimes yellowish-brown, the rest of the abdomen pale piceous brown, the extreme apex brownish-yellow. Pilosity yellowish, fine and pointed, oblique and fairly abundant on the abdomen, sparse elsewhere. Pubescence inconspicuous. Shining and nearly entirely smooth. Head quadrate, the sides moderately convex, the posterior margin straight, the posterior angles widely rounded. Mandibles smooth, shining, finely and sparsely punctured. The scapes fall short of the occipital margin by the length of the eye; 2nd joint of flagellum as long as wide, 3rd-7th joints much wider than long, club 2- or almost 3-jointed. Frontal area indistinct. Head a little less than one and a-half times wider than the thorax. The latter very short, not quite as long as the head including the closed mandibles. Pro-mesonotum marginate in front and at the sides, the shoulders sharply angular. Pro-mesonotal suture indicated only by the slightly raised anterior margin of the mesonotum; the latter has no distinctly

delimited declivity. Epinotum marginate at the sides, the margins being continued along the inner side of the spines; the latter one-third as long as the interval between their bases, divergent, oblique and slightly compressed. Excepting a very small and transversely concave face at the extreme base, the whole of the upper surface of the epinotum forms one continuous plane. First segment of petiole subquadrate, the slanting dorsal face one-third wider than long, the anterior angles very slightly rounded; node of 2nd segment subglobose, as long as wide, without a median groove or posterior emargination.

♀. 7.9 mm. (hitherto undescribed). Length of front wing 7.8 mm. Head pale yellowish-brown, thorax, petiole, legs, antennae and mandibles dull ochreous, the scutellum, base of mesonotum and declivity of epinotum more or less brownish-yellow, abdomen brown, paler near the base. Legs, antennae and abdomen with thin, oblique and pale yellow hairs; head, thorax and petiole with fairly abundant erect hairs, which are long and coarse. Head nitidulous, longitudinally striate and rugulose between the striae, with a few large and shallow punctures. Mandibles shining, feebly striate, sparsely and coarsely punctured. Mesonotum and scutellum smooth and shining, very sparsely but strongly punctured. Dorsum and sides of epinotum dull and longitudinally rugose, the declivity and the petiole dull and rugulose. Abdomen smooth and shining, finely punctured. Head nearly as long as wide behind the eyes, the posterior margin convex. Eyes large, convex and prominent, occupying a third of the sides. Median area of clypeus smooth and excavated lengthwise in the middle. Frontal area and sulcus distinct. Head, excluding the eyes, very little wider than the thorax across the tegulae. Thorax fairly convex from side to side and in front, a trifle wider than long. Scutellum a little wider than longer, not much narrowed behind. Dorsum of epinotum very short, armed with a blunt, horizontal and triangular tooth on each side. Declivity vertical, not marginate. The vertical anterior face of the 1st segment of the petiole is a little longer than wide, parallel-sided, the anterior angles rounded, the posterior angles surmounted by a small vertical tooth. Second node wider than the 1st, semicircular when seen from above (the convexity posterior), the anterior angles subacute, without a median groove or posterior emargination. Wings deeply tinged with yellow, the nervures and stigma brownish-ochreous.

(S.A.M., R.M., G.A. colls.; type of ♀ in my collection.)

This species is fairly common, always nesting in Rhodesia under stones, very often in close proximity to the nests of termites.

Race NATALENSIS, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 431, ♂, ♀, ♂, 1910.

♂. 2-2.5 mm. Pilosity longer than in var. *rectinota*. It differs from that variety as follows: The pronotum is not marginate in front, where it is gradually curved into the neck, not almost vertically truncate as in *rectinota*. The pro-mesonotum is narrower and longer, as long as wide in front (in *rectinota* wider in front than long). The anterior face of the 1st segment of the petiole is as long as wide. Otherwise like the type of the species.

“♀. 6-6.7 mm. Scape as in the ♂, not reaching the occipital margin. Spines longer than in the type of the species. First node quadrate, possibly wider than long. Body more elongate and less squat than in the type of the species. Pilosity shorter. Reddish or slightly brownish-yellow, abdomen more or less brown. Front wing 6.3 mm. long, subhyaline, nervures pale.

“♂. 2.3 mm. Yellowish-brown. Joints of the flagellum a little longer than wide (a little wider than long in the type-species). Wings and pilosity as in the ♀. Otherwise like the type of the species.”

Estcourt, Natal (Wroughton); Krantz Kloof, Natal (H. W. B. Marley). (S.A.M., R.M., G.A. colls.)

Race NATALENSIS, var. BRAUNSI, Forel.

Rev. Zool. Afric., vol. 1, p. 277, ♂, 1911.

♂. 2.6-3.5 mm. Head yellowish-brown, thorax and nodes varying from ochreous to reddish-brown-ochreous, abdomen reddish-brown. The puncturation is stronger than in the race, and in the larger ♂♂ the pro-mesonotal suture is clearly indicated by the raised margin of the mesonotum. The epinotal spines are a little longer, the declivity marginate at the sides. First node of petiole a little longer than in the race, distinctly longer than wide. Otherwise like the type of the race.

Estcourt, Natal (Wroughton). (S.A.M., R.M., G.A. colls.)

C. INERMIS, Mayr, race DELAGOENSIS, Forel.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 766, ♀, 1862.

(Race) Mitth. Schweiz. Ent. Ges., vol. 9, p. 99, ♀, 1894.

“♀. 3.4-4.1 mm. Mandibles closely and fairly coarsely striate. Head at least as long as wide (wider in the type of the species). Thorax wider, more robust and more deeply constricted than in the

type-species. Tubercle of the mesonotum very distinct. Epinotum with two distinct, broad and blunt teeth. Abdomen distinctly cordate. Glossy and in part somewhat shining, the abdomen even more so. Irregularly, finely reticulate-rugulose and very sparsely punctured (the head strongly, closely and regularly punctured). Epinotum reticulate-punctate; pronotum and back of the head transversely rugulose, the rest of the head longitudinally striato-rugulose. The ventral surface of the 1st node has a small tooth in front. Brownish-black; mandibles, cheeks, flagellum and articulations dark reddish. Erect pilosity almost entirely wanting.

"Delagoa (Dr. Liengme)."

The type-species has a North African distribution. It has the head smooth and shining; sparsely and finely punctured. The epinotum is entirely devoid of teeth or even tubercles. The race *delagoensis*, of which I possess a co-type, differs very considerably from the type-species. The head, thorax and petiole are dull or very nearly so. The scapes are much shorter, falling short of the occipital margin by



FIG. 51.—*C. inermis*, Mayr, race *delagoensis*, Forel.

about the length of the eye. The head is also wider, the posterior margin shallowly concave (straight in the type of the species). The eyes are placed a little behind the middle of the sides of the head. The pro-mesonotal suture is more deeply impressed, and the dorsum of the epinotum widens towards the apex (hardly wider there than at the base in the type of the species) and bears on each side a broad tubercle ending in a minute dentiform point. The 1st segment of the petiole is trapezoidal, a trifle longer than wide. The node of the 2nd segment has a median groove (not so deep as in the type-species), and the discs have rather prominent posterior margins.

C. SANTSCHII, Forel, var. *CLYMENE*, Forel.

Rev. Zool. Afric., vol. 2, p. 322, ♀, 1913.

(Var.) Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 337, ♀, 1914.

♀. 3·3–3·5 mm. Black, the club of the flagellum yellowish-red, the tarsi brown. Pilosity absent, the decumbent pubescence very short and sparse, a little less sparse on the abdomen. The whole body very smooth and very shining, only the sides of the mesopleura,

epinotum and the 2nd node of the petiole very superficially rugulose. Abdomen microscopically alutaceous. Head subglobose, as long as wide, a little wider in front than behind, the posterior margin shallowly concave in the middle. Eyes placed a little behind the middle of the sides. The scapes almost reach the posterior margin; 3rd-6th joints of the flagellum very little wider than long, the club 3-jointed. The profile of the pro-mesonotum forms a continuous curve, the pro-mesonotal suture obsolete in the middle, at the sides very shallow, or sometimes entirely obsolete. Pro-mesonotum not marginate, the mesonotum without a distinct declivity. Dorsum of epinotum twice as wide at the apex as long, fairly convex lengthwise, armed with two acute, fairly slender and moderately divergent spines, about one-third as long as the interval between their bases. First segment of petiole as long as wide, at least one and two-thirds wider in front than behind, slightly excavated longitudinally in the middle, the anterior angles widely rounded. Node of 2nd segment very wide, almost twice as wide as long, with a very shallow median groove and the posterior



FIG. 52.—*C. Santschii*, Forel, var. *clymene*, Forel.

margin widely emarginate in the middle, distinctly wider than the 1st segment.

Durban (C. B. Cooper). (G.A. coll.).

C. NIGRONITENS, Santschi.

♂. 2.8-3.8 mm. Black; tarsi brown, mandibles and flagellum ferruginous, the club brown. Very sparsely pubescent; pilosity absent except on the clypeus. Very smooth and shining, the head finely and very sparsely punctured, the clypeus and area around the antennal pits superficially rugulose longitudinally. Head, excluding the mandibles, distinctly longer than wide, varying from one-seventh to one-fifth longer, the sides barely convex, nearly as wide in front as behind (in the larger ♀♀ wider behind than in front), the hind margin almost straight, the posterior angles rounded. Mandibles narrow, longitudinally striate, obtusely 4-dentate. Anterior margin of clypeus feebly convex in the middle. Scapes very short, hardly extending beyond the posterior third of the head; 2nd to 7th joints of the flagellum wider than long, the club 3-jointed. Eyes almost flat,

placed at the middle of the sides. Thorax long and narrow. The sides and front of the pronotum subvertical. Pro-mesonotal suture feeble in the smaller ♀♀, more distinct in the larger ♀♀, in which the mesonotum is somewhat tumid in front and clearly higher than the level of the pronotum. Declivity of the mesonotum short and oblique in the small ♀♀, longer and steeper in the larger ♀♀. Mesoepinotal suture not deep; mesopleura feebly reticulate. Median tubercle of the mesonotum obsolete or nearly so. Dorsum of epinotum merging into the declivity by a very gradual curve, armed with two very short, suberect teeth, which are shorter than their basal width. First segment of petiole trapezoidal, a little longer than wide in front, the anterior angles widely rounded. Node of 2nd segment feebly emarginate behind and shallowly grooved longitudinally above, not so wide as the 1st segment. Abdomen elongate, two-thirds longer than wide.

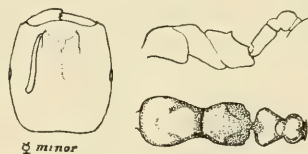


FIG. 53.—*C. nigrinitens*, Santschi.

Matoppo Hills, S. Rhodesia; nesting in the hollow and dead branches of a small shrub.

A very distinct species, easily recognised by its polished integument, elongate head, short scapes and minute epinotal teeth.

SUB-GENUS OXYGYNE, Forel.

Ann. Soc. Ent. Belg., vol. 45, p. 376, 1901.

“Distinguished in the ♀ by the more or less completely edentate mandibles which lack a masticatory margin; by the rudimentary frontal carinae and by the aberrant and characteristic structure, whereas in the ♀♀ of *Cremastogaster*, s. str., the structure varies but little and is not very characteristic of the species.” Type of sub-genus, *C. Emmae*, Forel. In *C. Daisyi*, Forel, the ♀♀ also have no frontal carinae, and the mandibles are 4-dentate and very narrow, the epinotum with long spines, antennae 11-jointed.

In some species the ♀♀ have the epinotum unarmed, and the frontal carinae are sometimes fairly developed, so that the characters diagnostic for the sub-genus appear as yet to be insufficiently determined for the ♀ caste.

It is generally assumed on the evidence of the structure of the ♀ (although I believe no proof has yet been furnished) that the queens of this sub-genus and of the sub-genus *Atopogyne* exhibit a method of nest-formation, based on a temporary social parasitism on other species of *Cremastogaster*, similar to that shown in the case of the dolichoderine *Bothriomyrmex meridionalis*, var. *atlantis*. In this species the queen enters the nest of a *Tapinoma erraticum* and takes refuge from the attacks of the *Tapinoma* workers by climbing to the back of their queen. While in this position she applies her energies to the task of sawing off the head of the unfortunate victim below her, and by the time this has been accomplished has acquired the nest odour of the *Tapinoma* and is then adopted by the workers in place of their dead and mutilated queen. The workers bring up the progeny of the *Bothriomyrmex* queen, and as the former eventually die of old age the nest becomes a pure colony of *Bothriomyrmex*.* In one species of *Oxygyne*, *C. Ranavalonae*, the aged queen has the abdomen enormously enlarged, like the queens of the permanently parasitic genus *Anergates*.

C. (sub-gen. OXYGYNE) OSCARIS, Forel.

Schultze, Reise Süd-Africa, vol. 4, p. 7, ♂, ♀, ♂, 1910.

“ ♂. 3.5–4 mm. Mandibles 4-dentate, narrow, closely striate, punctured, nitidulous and pilose. Clypeus widely impressed in the middle in front and shallowly emarginate. Frontal carinae very short, almost obsolete. Frontal area indistinct. Eyes moderately flat, placed somewhat behind the middle of the sides. Head wider than long, feebly concave behind, the sides very convex. The scape extends beyond the back of the head by a good third of its length; club 3-jointed with distinct constrictions between the 3 joints; 2nd–7th joints of the flagellum only a little, but nevertheless distinctly longer than wide. Pronotum rounded, feebly impressed in the middle. Mesonotum without a median carina, barely convex, with an arcuate transverse torus at about the posterior third (the convexity of the torus in front); behind the torus a transverse impression. Thoracic constriction fairly strong. Dorsum of epinotum convex, wider than long, with a very shallow longitudinal groove, the epinotal spines very acute, nearly as long as the dorsum or as the interval between them, distinctly curved a little inwards and downwards. Declivity concave, shorter than the dorsum. First segment of the petiole a little longer than wide, trapezoidal, with laterally trun-

* See Santschi, ‘Ann. Soc. Ent. France,’ vol. 75, pp. 362–92, 1906.

cate anterior angles. From these truncate angles to the posterior margin the sides are concave. Second segment nearly twice as wide as long, very shallowly impressed above. Abdomen almost truncate in front, acute apically. Legs fairly long. Moderately shining. Head quite finely, the thorax more coarsely longitudinally rugose (the striae on the epinotum divergent), and reticulate between the striae. Clypeus very superficially rugulose like the abdomen. Petiole almost reticulate only. Body and limbs with a sparse, fine and yellowish pubescence, pilosity absent. Black; mandibles, antennae and legs blackish-brown.

“ ♀. 4.5 mm. Mandibles narrow, sickle-shaped as in *Polyergus*, with the apex acute, shining, striate, punctate. Head short, widely truncate in front up to the level of the frontal area, somewhat as in *Colobopsis*, but the truncated face is only obtusely and indistinctly marginate. Clypeus almost flat, without a carina, feebly emarginate in the middle in front. Behind the eyes the head is abruptly narrowed and almost trapeziform, but not narrowed in a neck-like manner, the posterior margin consisting of the articular border only. The scape extends beyond the posterior margin by two-fifths of its length; the joints of the flagellum are longer than in the ♂. Frontal carinae as in the ♀. Thorax narrower than the head; the mesonotum overhangs the pronotum to a certain extent in front. Metanotum pointed, projecting in an almost dentiform shape over the epinotum. Scutellum large. Epinotum quite unarmed, declivous, with a very short dorsum. First segment of petiole wider than long, concave in front, otherwise as in the ♀. Second segment more than twice as wide as long, in front wider and produced laterally. Abdomen, frontal area and clypeus smooth; only a few transverse rugae in front on the clypeus. Legs and antennae shining, with numerous piligerous punctures. Otherwise the head, thorax and petiole are nearly dull, closely and rather coarsely longitudinally rugose, and coarsely reticulate-punctate or reticulate in between the rugae. The scutellum and declivity of the epinotum like the rest. Legs and antennae with abundant decumbent hairs, head, thorax and petiole with dark yellowish exserted hairs. Abdomen almost glabrous. Brownish-black, abdomen, the front of the head, antennae and legs brown. Mandibles brownish-red. Wings hyaline, with pale nervures and stigma.

“ ♂. 3 mm. Mandibles narrow, with only an apical tooth. Head rather wider than long, with a distant hind margin. The mesonotum overhangs the pronotum. Thorax somewhat wider than the head. Epinotum unarmed, but with 2 well-defined faces, the dorsal one short and nearly horizontal. Nitidulous. Head and thorax finely

rugose; abdomen finely reticulate; petiole reticulate-rugose. Wings long. Nearly black, antennae and legs brown. Pilosity, etc., as in the ♂.

“Kammagas, Little Namaland, in a large nest on an orange-bush. (Schultze). The carton nest is 36 cm. long by 26 cm. wide. . . .”

SUB-GENUS ATOPOGYNE, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 47, p. 343, 1911.

“Characterised by the depressed head, rectangular or trapezoidal, by the straight mandibles with a long masticatory margin, and by the elongate and anteriorly narrowed thorax, all these characters applying only to the ♀.”

C. (sub-gen. ATOPOGYNE) WELMANI, Forel, race *RETUSA*, Santschi.

Ann. Soc. Ent. Belg., vol. 53, p. 64, ♀, 1909.

(Race) Ann. Soc. Ent. France, vol. 84, p. 500, ♀, ♀, ♂, 1916.

♀. 3.2–4 mm. Head bright red (burnt sienna or brick-red), thorax red or brownish-red, becoming progressively darker towards the petiole, abdomen black, legs brownish-red, the first 4 tarsal joints paler, antennae brownish-red, the club paler. Pilosity absent, except a few hairs on the clypeus and abdomen. Pubescence exceedingly fine and sparse, more abundant on the abdomen than elsewhere. Mesopleura reticulate-punctate and dull, sides of the epinotum finely and longitudinally rugulose and moderately shining, the rest of the thorax, the head and the petiole very smooth and shining, finely and sparsely punctured. Abdomen smooth, shining, impunctate. Clypeus, frontal area and the anterior third of the sides of the head longitudinally striate or aciculate. Mandibles longitudinally striate, 4-dentate. Head, excluding the mandibles, one sixth longer than wide, rectangular, the sides subparallel, the posterior margin widely and shallowly concave, the posterior angles feebly rounded. The scape does not extend beyond the posterior fourth of the head, 3rd–7th joints of the flagellum wider than long, the club 3-jointed. Eyes flattened, placed at the middle of the sides. Median area of clypeus fairly convex lengthwise, the anterior margin straight. Pronotum rounded at the sides, the anterior face rather steep. Pro-mesonotal suture faintly defined in the middle, more strongly defined at the sides. Mesonotum at least one-third longer than wide at the base, with a trace of a very obtuse median carina in front; the declivity fairly steep, and rounded above. Meso-epinotal suture deep. Dorsum

of epinotum convex at the base lengthwise, its lateral margins also convex, armed with two feebly-pointed tubercles (hardly dentate). First segment of petiole oblong, very little wider in front than behind, nearly one-third longer than wide, slightly concave in front. Node of 2nd segment distinctly narrowed in front, hardly wider than the 1st, barely emarginate behind, with a trace of a median longitudinal groove (quite obsolete in some specimens). Abdomen a little longer than wide.

♀. 8.2 mm. Mandibles and anterior margin of the head dark reddish-brown; a longitudinal band on each side of the mesonotum brownish, legs reddish-yellow, abdomen dark brown, becoming gradually paler or more reddish towards the base; otherwise the colour is like that of the ♂. Sculpture of the head as in the ♂, but stronger and more abundantly punctured. Mandibles strongly striate, sparsely punctured in the striae, 5-dentate. Mesonotum and scutellum very smooth and shining, sparsely and sharply punctured. Epinotum dull, transversely rugulose. Petiole and abdomen moderately shining.



FIG. 54.—*C. Welmani*, Forel, race *retusa*, Santschi. Head less enlarged than the other two.

Head, excluding the mandibles, nearly one-third longer than wide, like that of the ♀ in general, but with the posterior angles much more pronounced, and the sides near the eyes very distinctly concave (in the ♀ there is only a slight trace of this concavity). Eyes placed a little in front of the middle of the sides, feebly convex. Ocelli depressed. The scape hardly reaches the posterior third of the head; 3rd joint of the flagellum wider than long, 4th as wide as long, all the rest longer than wide. The mesonotum slopes downwards from back to front, and is considerably narrowed apically; it is one-fourth longer than wide across the tegulae. Metanotum produced in the middle, subdentiform. Epinotum unarmed, the dorsum at least four times wider than long, the declivity subvertical. First segment of petiole subtrapezoidal, the sides convex, widest a little in front of the middle. Second node oblongo-ovate, not wider than the 1st, without a median groove or posterior emargination. Wings hyaline, nervures and stigma ochreous.

♂. 3.5 mm. Head black, the anterior third reddish-brown, thorax and abdomen brown, the paraptera and metathorax paler than the rest,

legs pale-brown, tarsi, mandibles and antennae fuscous ochreous. Antennae densely pubescent; the brow of the declivity of the epinotum has a tuft of thin, long hairs on each side; elsewhere the pubescence is very sparse. Smooth and very shining, except the head, which is very superficially reticulate-rugulose. Head trapezoidal, as long as wide across the eyes. The latter large, occupying the anterior half of the sides. Mandibles shining and bidentate. Clypeus with a transverse groove across the median area. Scapes two and a-half times longer than wide; 1st joint of flagellum shining, the remaining joints dull, 3rd joint wider than long, the remaining joints as long as, or longer than wide. Scutellum conical in outline, much higher than the epinotum. First segment of petiole wider than long, declivous, a little narrowed in front; 2nd segment subglobose, a little wider than the 1st.

Victoria Falls. A populous nest under the bark of a leguminous tree (*Baikaiea* or allied genus), containing several dozens of ♀ ♀ and ♂ ♂, and about three or four hundred ♀ ♀.

SUB-GENUS DECRACREMA, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 18, 1910.

Characters.

♂ and ♀ with 10-jointed antennae. Otherwise like *Cremastogaster*, s. str.

C. (sub-gen. DECRACREMA) ARTHUR-MÜLLERI, Forel.

(As race of *gallicola*, Forel) Mitth. Schweiz. Ent. Ges., vol. 9, p. 96, ♂, 1894.

Mayr, Ann. K.K.N.H. Mus. Wien, vol. 10, p. 144, 1895.

“♂. 3.8 mm. Club of antenna more or less 3-jointed. First segment of petiole with a long thin tooth below in front. Dorsum of thorax less uniformly flattened than in *gallicola*. The scattered puncturation somewhat stronger. Epinotal spines even shorter than in that species. Otherwise like the ♀ major of the type-species.”

Delagoa (Dr. Arthur Müller).

This species and *C. Liengmei* were wrongly described by Forel as forms of *gallicola*. Mayr, in correcting the error, remarks that “*C. gallicola* has a short mesonotum strongly rounded from side to side in front, and the 1st segment of the petiole has only a very small tooth below, or none at all. *C. Arthur-Mülleri* has a much larger mesonotum, and the meso-ePINOTAL suture is much deeper; the 1st segment of the petiole has a thin spine below in front, which is directed steeply forwards and downwards. Larger than *C. gallicola*.”

C. LIENGMEI, Forel.

(As race of *gallicola*) Mitth. Schweiz. Ent. Ges., vol. 9, p. 96, 1894.
Mayr, Ann. K.K.N.H. Mus. Wien, vol. 10, p. 144, 1895.

“♀. Like *gallicola* in size, and with the same brighter colour in the ♀ minor and with more equal sized ♂ ♀. Posterior half of the head very shining and fairly smooth. Mesonotum without a median tubercle in front. Epinotal spines longer than in *gallicola*. First segment of the petiole with a quite obtuse protuberance below in front, directed entirely forwards (not projecting out underneath). Thorax somewhat more coarsely rugulose and more feebly constricted. Otherwise similar.

“Delagoa (Dr. Liengme).”

Race WEITZAECKERI, Emery.

Ann. Soc. Ent. France, vol. 63, p. 28, ♀, 1895.

♀. 3-3.7 mm. Black; abdomen, antennae, legs and mandibles dark brown or blackish-brown. Finely and very sparsely pubescent; pilosity absent except on the clypeus. Head smooth and shining, sparsely and finely punctured, the clypeus, mandibles and sides in front of the eyes finely striate longitudinally. Thorax longitudinally rugulose above and dull (sometimes more strongly sculptured, almost rugose), the sides of the pronotum shining, the mesopleura reticulate. First segment of petiole fairly dull, very finely reticulate or coriaceous, the 2nd segment and the abdomen smooth and shining. Head as wide as long, very little narrower in front than behind, the posterior margin straight, the sides very convex. Eyes placed in the middle of the sides. Frontal area indistinct. The scape nearly reaches as far as the occipital margin; all the joints of the flagellum longer than wide, except the 3rd and 4th, which are about as wide as long. Seen in profile, the anterior face of the pronotum is subvertical, its brow rounded, the rest of the pronotum and the mesonotum flat. The promesonotal suture is very shallow, the meso-ePINotal deep. Dorsum of epinotum oblique, forming a continuous plane with the declivity. Epinotal spines thin and acute, divergent, directed obliquely upwards, a little more than one-third the length of the interval between their bases. The mesonotal declivity is short and slightly concave transversely. First segment of petiole trapezoidal, wider than long, the anterior angles obliquely truncate, with a minute denticle on each side in front of the posterior margin; node of 2nd segment with a

wide median longitudinal groove, the posterior margin of the lateral discs well defined. The 1st node is unarmed below.

Pietermaritzburg (Simon); Estcourt, Natal (R. C. Wroughton). Durban. (S.A.M., R.M., G.A. colls.)

I have attached to this race a large number of specimens from Durban and neighbourhood, which have been wrongly recorded by Dr. Forel as *C. excisa*, Mayr, race *Andrei*, Forel (Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 236, 1914), and also his *C. coelestis*, Santschi, var. *kloofensis* (*loc. cit.*, p. 237). These specimens have 10-jointed antennae, whereas the true *Andrei* (from the Congo) has 11 joints. In the same place Forel describes several other varieties, also erroneously placed with species of *Cremastogaster* s. str. These are dealt with below.



FIG. 55.—*C. Liengmei*, Forel, race *Weitzaeckeri*, Emery.

Race WEITZAECKERI, var. THAIS, Forel.

(As var. of race *Andrei*) Ann. Soc. Ent. Belg., vol. 57, p. 126, ♀, 1913.

♀. 2.5–3.5 mm. Differs from *Weitzaeckeri* by its more brownish and paler colour. The head is much more convex above, especially in its posterior half. The 2nd joint of the flagellum is clearly wider than long, and the whole flagellum is a little shorter and thicker than in the race. Otherwise similar.

Port Elizabeth (Brauns); Grahamstown (Sherry). (S.A.M., R.M., G.A. colls.)

Race WEITZAECKERI, var. GORDONENSIS, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 236, ♀, 1914.

♀. 2.8–3.2 mm. This form is intermediate between *Weitzaeckeri* and var. *acanthobia*, Forel. Like the former the 1st segment of the petiole is wider than long, and the epinotal spines are fairly long and thin; it resembles *acanthobia* in having the steep declivity of the mesonotum strongly concave transversely, even more so than in that variety, the sides of the declivity standing out as distinct ridges.

Gordon's Bay, Cape. Prov. (S.A.M., G.A. colls.)

Race WEITZAECKERI, var. ACANTHOBIA, Forel.

Loc. cit., ♂.

♀. 2.8-3.3 mm. Head longer than in the race, as long as wide (not longer than wide as stated by Forel), barely narrower in front than behind. In the race the head is clearly narrower in front, and is also one-sixth wider than long. The sculpture of the head is stronger in front, even the clypeus showing a fairly clear longitudinal rugulosity. The thorax is quite dull (slightly shining in *Weitzaeckeri*), more strongly sculptured than in the race, almost longitudinally rugose. The declivity of the mesonotum is steeper and longer, nearly as long as the anterior plane, more deeply concave transversely. Seen in profile, the dorsum of the thorax rises from front to back as far as the mesonotal declivity. The dorsum of the epinotum is less widened towards the apex, and the spines are broader at the base and shorter, or barely half as long as the interval between their bases. The first segment of the petiole is as long as wide in front, the anterior angles less abruptly rounded. It bears below in front a short obtuse tooth, directed downwards.

Willowmore, Cape Prov. (S.A.M., R.M., G.A. colls.)

The specimens from Durban which were also assigned to this variety by Dr. Forel are quite different, having the broad head and other characters distinctive of typical *Weitzaeckeri*, with which they should be placed. They are duller and more strongly sculptured on the thorax than *Weitzaeckeri*, but this character is too variable within the group to justify the separation of the Durban specimens as a variety.

The var. *pensitata*, Forel (*loc. cit.* p. 341) should be sunk as a synonym of *acanthobia*. It is merely a little smaller and has the angles of the 1st segment of the petiole more rounded.

C. LIENGMEI, race CACULATA, Forel.

(As race of *C. Peringueyi*) *loc. cit.* p. 341, ♂.

♀. 3.5-4 mm. Colour as in var. *acanthobia*. Sculpture of the thorax more reticulate and rugulose and a little stronger than in that variety, [especially the dorsum of the epinotum, which is almost rugose; sides of the meso- and epithorax and of the segments of the petiole sharply reticulate. Head globose, a little wider than long. Thorax similar to that of *acanthobia* but more robust, the declivity of the mesonotum as large and as sharply margined laterally as in that variety, but meeting the anterior plane in a less acute angle. Meso-epinotal suture deeper than in *acanthobia*. Dorsum of epinotum

wider at the apex, two and a-half times wider than long, hardly twice as wide as long in *acanthobia*. First segment of petiole wider than long, bearing below a fairly acute triangular tooth pointing downwards.

Durban (C. B. Cooper). (G.A. coll.)

All these races and varieties of *C. Liengmei* are, in my opinion, closely related, and it is most probable that when we have much more extensive material than is now at our disposal, it will be found that they will all be connected together by minute gradations whereby the limits of the present known forms will be entirely obscured.

SUB-FAMILY CAMPONOTINAE.

Characters.

Gizzard with a 4-sepaled-calyx separated from the cavity of the crop by circular muscles. (In the Dolichoderinae there is either no calyx or it is enclosed within the cavity of the crop.)

Petiole 1-jointed, variously shaped.

The poison gland forms a flat or oval cushion; the poison vesicle large and elliptical; no true sting present; only a vestige of it is present, acting as a support for the orifice of the poison vesicle.

Pupae usually enclosed in cocoons.

The following subdivisions of the sub-family have been instituted by Dr. Forel (Mem. Soc. Ent. Belg., vol. 20, p. 87 *et seq.*, 1912):

SECTION I. PROCAMPONOTINAE.

Calyx of gizzard greatly shortened. The 4 sepals strongly divergent and chitinised from their base upwards. They are very short and strongly recurved at their ends. Mandibles inserted very close together, linear, porrect, longer than the head. No frontal carinae present. Antennae inserted far behind the posterior margin of the clypeus, in an isolated antennal socket Genus *Myrmoteras*, Forel (not African).

SECTION II. MESOCAMPONOTINAE.

Calyx of gizzard reflected. Including the following S. African genera: *Aphomyrmex*, *Plagiolepis* and *Acantholepis*.

SECTION III. EUCAMPONOTINAE.

Calyx of gizzard straight or slightly curved, but never reflected. Including the following S. African genera: *Oecophylla*, *Prenolepis*, *Camponotus* and *Polyrachis*.

The Mesocamponotinae contains three tribes, of which two are represented in our region, distinguished as follows:

- A. Antennae 11-jointed in the ♀, 12-jointed in the ♂. Gizzard longer
 Tribe *Plagiolepidini*, Forel.
- B. Antennae 9- or 10-jointed in the ♀, 10- or 11-jointed in the ♂. Gizzard
 shorter Tribe *Myrmelachistini*, Forel.

The Eucamponotinae contains five tribes, three of which are represented in our region, and distinguished as follows:

- A. Antennae 12-jointed in the ♀, 13-jointed in the ♂. Calyx of gizzard slightly curved or recurved. Antennae inserted at the sides of the frontal area Tribe *Prenolepidini*, Forel.
- B. Gizzard long and narrow, the calyx straight. Antennae inserted somewhat behind the frontal area, but near the ends of the frontal carina
 Tribe *Oecophyllini*, Forel.
- C. Gizzard as in B. Antennae inserted at the sides of the frontal carinae, far from the clypeus and the frontal area Tribe *Camponotini*, Forel.

Key to the Genera of Camponotinae, ♀ ♀.

- (2) 1. Antennae 9-jointed *Aphomomyrmex*, Emery.
- (1) 2. Antennae with 11 or 12 joints.
- (6) 3. Antennae 11-jointed.
- (5) 4. Epinotum and petiole more or less bidentate or bispinose
Acantholepis, Mayr.
- (4) 5. Epinotum unarmed *Plagiolepis*, Mayr.
- (3) 6. Antennae 12-jointed
- (8) 7. Maxillary palpi 5-jointed. Antennae inserted behind the frontal area but near the anterior ends of the frontal carinae *Oecophylla*, Smith.
- (7) 8. Maxillary palpi 6-jointed.
- (10) 9. Antennae inserted at the sides of the frontal area, close to the posterior margin of the clypeus *Prenolepis*, Mayr.
- (9) 10. Antennae inserted at the sides of the frontal carinae, some distance from the frontal area and clypeus.
- (12) 11. ♀ ♀ polymorphic. Petiole not spinose or dentate. Shoulders of the pronotum very rarely dentate or sharply angular, never spinose in S. African species *Camponotus*, Mayr.
- (11) 12. ♀ ♀ monomorphic. Petiole nearly always spinose or dentate. Shoulders of pronotum often spinose, at least dentate *Polyrachis*, Smith.

SECTION MESOCAMPONOTINAE, Forel.

TRIBE MYRMELACHISTINI, Forel.

GENUS APHOMOMYRMEX, Emery.

Ann. Soc. Ent. Belg., vol. 43, p. 493, 1899.

Characters.

“♀. Head short. Antennae 9-jointed (or less?), the 1st joint of the flagellum longer than the 2nd, the following joints gradually

incrassate, without a distinct club. Clypeus slightly prolonged arcuately between the frontal carinae, short, feebly projecting in front; no distinct frontal area. Eyes oval, placed noticeably distant from the frontal carinae, the latter far apart; ocelli distinct. Mandibles of the usual shape. Thorax of the *Plagiolepis* type, the postscutellum (metathorax) forming a transverse torus.

"Scale of petiole thin. Pilose hairs thin and aculeate, not branched at the apex.

"♀. Head longer, otherwise formed as in the ♀. Antennae 8- or 10-jointed. Thorax narrow, elongate. Scale of petiole thick and low. Neuration of the wings as in *Plagiolepis*.

"♂. Much smaller than the ♀. Antennae 10-jointed as in the ♀ (in the only species in which the ♂ is known), the scape longer than half the flagellum. Mandibles dentate. Frontal carinae nearer together. Scale of petiole about the same as in the ♀. Genital armature well developed, stipes forming a falciform plate, the volsella slender and longer than the lacinia, which is distinct."

Distribution.—Cameroons and Natal. Also Borneo if *A. Andrei* Em., is correctly ascribed to this genus.

A. MURALT, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 499, ♀, 1910.

"♀. 2.4 mm. Closely allied to *A. afer* but smaller. Head more convex in front, the sides also more convex. Pro-mesonotal suture deeper; dorsum of epinotum more convex. Entirely smooth and shining, without pubescence and impunctate. Pilosity and colour as in *afer*.

"Natal (Dr. L. v. Muralt). It is perhaps only a race of *afer*, from which it differs chiefly by the absence of puncturation and pubescence and also by its smaller size."

The above diagnosis needs amplification by reference to *A. afer*, the description of which is as follows:

"♀. Black; antennae, trochanters, base of tibiae, and tarsi rusty red, the scape paler; very shining and smooth on the sides of the head, thorax and abdomen, less shining and finely punctulate on the vertex and also on the dorsum of thorax and abdomen; the latter are covered with a fine greyish pubescence, arising from the punctures. There are also some pilose hairs on the whole body, including the scapes and legs. Head subquadrate, a little narrower in front, the posterior angles rounded, the eyes placed in the middle of the sides, the ocelli forming a large triangle. Clypeus convex, its anterior

margin arcuate in the middle, feebly sinuate on each side; the suture between the clypeus and the frons very weak; the clypeus and cheeks are finely striolate and have some large punctures. Mandibles strongly striate, 3-dentate. The distance between the insertion of the antennae is a little less than their distance from the sides of the head. Antennae 9-jointed; the scape does not reach the posterior margin of the head; the flagellum gradually incrassate towards its apex, the last joint almost as long as the three preceding joints taken together. The thorax is squat, the pronotum and mesonotum together forming a globose mass, behind which the metanotum (at the bottom of the depression separating the mesonotum from the epinotum) forms a transverse torus bearing the stigmatic orifices. The epinotum in profile forms a continuous curve, its declivity is concave in the middle, very polished and shining. The scale is high and thin, narrower towards the summit, which is excised. Length 3-3.5 mm."

A. muralti is apparently a very rare species, as it has not been recorded again since it was first discovered by Dr. Muralt.

TRIBE PLAGIOLEPIDINI, Forel.

Including the genera *Acantholepis*, Mayr, and *Plagiolepis*, Mayr.

GENUS ACANTHOLEPIS, Mayr.

Europ. Formicid., p. 42, 1861.

Characters.

♀. Antennae 11-jointed, the scape long and usually extending beyond the back of the head, the flagellum filiform, incrassate apically but without a club. Antennae inserted close to the posterior margin of the clypeus, that is at the anterior end of the frontal carinae and at the sides of the frontal area. Frontal carinae short and fairly far apart. Ocelli or traces of the same sometimes present. Mandibles dentate, the masticatory margin oblique and usually long. Maxillary palpi decidedly long. Median area of clypeus gibbose, carinate or subcarinate in the middle. Pronotum long, the thorax always considerably narrowed in its meso- and metanotal portion, widening again at the epinotum. Both thoracic sutures well defined. Mesonotum small, oval or subcircular or quadrate, divided by a transverse impression or suture from a well-defined metanotum. This segment bears two stigmata which occupy a dorsal position and are often raised, so that this part of the thorax has a bituberculate appearance.

Epinotum always rather large and somewhat inflated, armed with a tooth or spine on each side or simply bituberculate, often excavated longitudinally above, and sometimes more or less emarginate between the teeth or tubercles. The dorsum of the epinotum higher than the meso- and metanotum. Petiole with a more or less scale-like node anteriorly and a peduncle behind, the scale emarginate, or bidentate or bispinose above. Abdomen oval, acute apically. Legs long and slender.

♀. Not considerably larger than the ♂. Ocelli not large. Pronotum not visible from above. Mesonotum broad, the scutellum much wider than long, its posterior margin wide and not angular. Metathorax fairly evident. Epinotum lower than the anterior part of the thorax, unarmed. Scale of petiole round or pentagonal, unarmed or merely emarginate above. Abdomen massive. Wings long, extending beyond the apex of the abdomen; anterior wing with 1 cubital cell, the radial cell closed.

♂. Much smaller than the ♀. Antennae 12-jointed; the scape long, at least half as long as the flagellum. Head more or less triangular, eyes large, ocelli small. Pronotum not visible from above. Scutellum narrower behind than in the ♀, the posterior outline more or less conical, much higher than the epinotum. The latter unarmed. Scale of petiole thicker than in the ♀. Wings long, but yet shorter and wider than in the ♀.

Distribution.—Palearctic, Ethiopian and Indo-Malayan regions.

The members of this genus are very active insects. All our species form their nests in the ground, usually under stones. The colonies are of moderate size, nests containing more than about 200 ♀♀ being rare. I have no records of myrmecophilous insects having been found in the nests of any of our South African species. Most of them are omnivorous, with a partiality for sweet substances, and therefore aphidicolous.

Key to the Species of Acantholepis ♂ ♀.

- (10) 1. Node of petiole bispinose above, the spines as long as or longer than the node is wide.
- (5) 2. Petiole very long, two and a-half times as long as the node is high (excluding the spines); the spines long, thin and straight.
- (4) 3. Head and thorax reddish-brown, dull and reticulate-punctate
longinoda, Arnold.
- (3) 4. Head and thorax ochreous, smooth and shining . . . *arenaria*, Arnold.
- (2) 5. Petiole shorter, as long as, or very little longer than the node is high.
- (9) 6. Spines of node round in cross-section, thicker at the base than at the apex.

- (8) 7. Head and thorax more or less yellowish-red, abdomen pale, at least at the base *spinosior*, Forel.
(7) 8. Head and thorax piceous, abdomen wholly black
spinosior var. *natalensis*, Arnold.
(6) 9. Spines of node flattened from front to back, as thick at the apex as at the base *spinosior*, var. *ballaensis*, Arnold.
(1) 10. Node of petiole only bidentate or emarginate above; if bidentate, then the teeth are much shorter than the width of the node.
(24) 11. Small species, 2·2 mm. or less; body not entirely black or dark brown.
(19) 12. Whole body very smooth and shining.
(18) 13. Thorax more or less ferruginous, head and abdomen dark brown.
(15) 14. Scape and tibiae pubescent only *rubrovaria*, Forel.
(14) 15. Scape and tibiae with exerted pilose hairs in addition to the pubescence.
(17) 16. Head dark brown *rubrovaria*, race *pilosa*, Forel.
(16) 17. Head ferruginous . . . *rubrovaria*, race *pilosa*, var. *avunculus*, Arnold.
(13) 18. Dark reddish-ochreous, apical third of abdomen blackish
Arnoldi, Forel.
(12) 19. Whole body dull.
(21) 20. Epinotum straight between the tubercles, which are almost obsolete
Foreli, Arnold, var. *convexa*, Arnold.
(20) 21. Epinotum concave between the tubercles, which are well developed.
(23) 22. Mesonotum feebly convex transversely, the meta-epinotal suture shallow *Foreli*, Arnold.
(22) 23. Mesonotum strongly convex transversely, the meta-epinotal suture deep *Foreli*, var. *impressa*, Arnold.
(11) 24. Larger species, more than 2·2 mm. long; body entirely or in greater part black or dark brown.
(28) 25. Head and thorax with a greenish abdomen with a violaceous metallic lustre; dorsum of epinotum with a deep median longitudinal groove.
(27) 26. Head and pro-mesonotum shining *submetallica*, Arnold.
(26) 27. Head and pro-mesonotum dull *submetallica*, var. *aspera*, Arnold.
(25) 28. Body without any metallic lustre.
(32) 29. Epinotum very coarsely and irregularly rugose; pilosity long and white.
(31) 30. Smaller species, 2·4 mm.; scape extending beyond the back of the head by one-fourth of its length *crinita*, Mayr.
(30) 31. Larger species, 2·6-3·3 mm.; scape extending beyond the back of the head by nearly one-third of its length
hirsuta, Santschi, var. *elevata*, Forel.
(29) 32. Epinotum finely sculptured; pilosity not white.
(34) 33. Large stout species; head and thorax closely and finely sculptured and dull *silvicola*, Arnold.
(33) 34. More slender species; head and thorax more or less smooth and shining.
(40) 35. The scape extends beyond the back of the head by nearly half its length, or more.
(37) 36. Head not narrower in front than behind; the scape extends by more than half its length beyond the back of the head
egregia, Forel, race *Santschii*, Arnold.

- (36) 37. Head narrower in front than behind; a little less than half the scape extends beyond the back of the head.
- (39) 38. Lateral profile of the dorsum of the epinotum very convex, scale of petiole thick *egregia*, Forel.
- (38) 39. Lateral profile of dorsum of epinotum straight and inclined upwards posteriorly; scale thinner . *capensis*, Mayr, var. *validiuscula*, Emery.
- (35) 40. The scape extends beyond the back of the head by very little more than one-third of its length.
- (42) 41. Metathorax and epinotum fairly dull, rugulose or reticulate; scale bidentate *capensis*, Mayr.
- (41) 42. Metathorax and epinotum shining.
- (44) 43. Length 2.4–2.8 mm.; scale emarginate above
capensis, Mayr, race *simplex*, Forel.
- (43) 44. Length 2 mm.; scale more deeply emarginate, or almost bidentate
capensis, race *laevis*, Santschi, var. *Alexis*, Arnold.

The above key does not include *capensis*, race *Junodi*, and var. *simplicoides*, Forel, and *simplex*, var. *minuta*, Forel, which are not known to me in nature.

A. SPINOSIOR, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 144, ♀, 1913.

♀. 2.7–3 mm. Head, thorax and petiole dark rusty red (dark burnt sienna), the head somewhat darker than the thorax, abdomen dark brown, becoming paler or rusty red towards the base; the basal segment sometimes pale all over except the sides. Legs yellowish-red, flagellum brown and darker at the apex, scapes dark ochreous, becoming gradually darker towards the apex. Pubescence very fine on the legs and scapes, very sparse on the thorax and abdomen, absent from the head. Abdomen with suberect, thick and bristly brownish-black hairs, elsewhere the pilosity is wanting. Head, thorax and petiole dull, very closely finely and evenly reticulate-punctate. Abdomen moderately shining. Mandibles very finely striate, feebly shining, with three or four acute teeth. Head, excluding the mandibles, nearly one-fourth longer than wide, ovoid, considerably narrowed in front, the posterior margin straight. Eyes large, placed in the middle of the sides. Ocelli much reduced, just visible under a high magnification. Clypeus very convex transversely, subcarinate in the middle. Scapes extending beyond the back of the head by two-fifths of their length; second joint of flagellum one and a-half times longer than wide, all the other joints much longer. Pronotum somewhat flattened above, the sides fairly convex, two-fifths wider than long in the middle. Mesonotum subcircular, a little wider than long, half as wide as the

pronotum; meso-metanotal suture feeble. Metanotum a little wider than long, the stigmatic tubercles fairly prominent. Meta-epinotal suture not very deep. Dorsum of epinotum as long as the declivity, fairly convex and rising posteriorly when seen in profile; seen from above subrectangular, not much widened posteriorly, the lateral margins convex, armed with two fairly acute, triangular teeth, distinctly excavated lengthwise in the middle of the apical half. Declivity oblique, the stigmata below prominent. Petiole as long as high in front, ending in front in a wedge-shaped scale which is inclined forwards, and armed above with 2 long, divergent spines directed upwards. The spines are thick at the base, as long as the scale is wide above, and seen from the side are distinctly curved backwards. Abdomen large, longer than wide.

♀. 5 mm. (hitherto undescribed). Black; legs reddish-brown, tarsi, mandibles and antennae reddish-ochreous, the apical third of the scape brownish. Pubescence decumbent, exceedingly fine, abundant all over. Apical margins of the abdominal segments with a few short, obtuse, yellowish erect hairs. Head and thorax dull, closely and fairly finely punctate-coriaceous. Abdomen dull, rugulose. Head subquadrate, wider than long. Ocelli placed close to the hind margin of the head. Eyes large, occupying the middle third of the sides, Mesonotum convex in front, flat above behind, a trifle wider than long, with a depressed median line over its anterior fourth. Scutellum broad, not much wider in front than behind, sloping gradually downwards to the metanotum. Dorsum and declivity of epinotum forming a continuous and steep curve. Petiole short, without a long peduncle behind the scale, the latter thin, unarmed, its upper edge convex from side to side. Abdomen one and a-half times longer than wide, the apex broad and obtuse. Wings fusco-hyaline, nervures and stigma brownish.

Bulawayo. Not common. The entrance to the nest is a very small hole, rarely surrounded with excavated material. A very agile species, and not easily seen, since its colour matches that of the soil. (S.A.M., R.M., G.A. colls.; type of ♀ in my collection). ✓

Var. *BALLAENSIS*, n. v.

♂. 3 mm. Head brownish-black, thorax dark red, petiole and abdomen black; legs and flagellum brown, tarsi and greater part of the scapes dull ochreous. Pilosity on the abdomen black, longer than in the type of the species. Thorax more robust than in the type-species, pronotum one and a-half times wider than long in the middle; mesonotum circular, as long as wide, the metanotum one-third wider than long. The petiole is a little longer than high in front and the

spines of the node are flattened from front to back, directed obliquely backwards; their anterior edge when seen in profile is straight, not convex as in the type-species. Otherwise like the type-species, but a much more robust and darker insect.

Balla-Balla, S. Rhodesia. (R.M., G.A. colls.; type in my collection.)

Var. NATALENSIS, n. v.

♀. 2.4 mm. Very similar to var. *ballaensis* but smaller. Sculpture and pilosity as in that variety. The head is narrower, being one-fifth to one-fourth longer than wide. The scapes extend beyond the hind margin of the head by one-third of their length. Epinotal teeth smaller than in the type of the species, and considerably smaller and more obtuse than in var. *ballaensis*. The petiole resembles that of the type of the species, the teeth being curved backwards, but they are shorter, being barely longer than their basal width. Colour like that of var. *ballaensis*.

Pietermaritzburg (Dr. C. Akerman), ex. Natal Museum coll. Type in my collection.

A. LONGINODA, n. sp. (Plate VIII, figs. 120, 120 a.)

♀. 3-3.8 mm. Head, thorax and petiole dark castaneous red or reddish-brown, abdomen black, legs brownish, the tarsi paler, flagellum dark brown, mandibles and scapes reddish-ochreous, the scapes becoming brownish towards their apices. Dull, very closely and finely reticulate-punctate, or apparently granulate; the thorax with a fine, widely-spaced reticulation superimposed, more apparent and closer on the epinotum than elsewhere. Abdomen almost smooth, shining. Femora reticulate-punctate and dull. Mandibles slightly shining, finely striate and sparsely punctured, 5-dentate. Pubescence very fine and sparse, almost absent on the thorax. Abdomen with a sparse, erect, black, short and obtuse pilosity. Clypeus with about 6 long dark and exerted hairs.

Head, excluding the mandibles, about one-sixth longer than wide, oval, the posterior margin straight. Eyes large, occupying nearly the middle third of the sides. Ocelli barely distinguishable. Scapes very long, quite half their length extending beyond the back of the head, reaching as far as the pro-mesonotal suture; 2nd joint of flagellum twice as long as wide, the other joints much longer. Pronotum long, nearly as long as the meso-metanotum, not more than one-fourth wider than long in the middle, fairly convex above from side to side.

Mesonotum longer than wide behind, widest in front, feebly convex transversely, straight longitudinally; meso-metanotal impression feeble. Stigmatic tubercles of metanotum prominent, subconical in profile. Meta-epinotal suture fairly deep. Dorsum of epinotum convex lengthwise, a little wider than long, not much narrowed at the base, seen from above broadly campaniform, armed with two fairly long oblique and feebly divergent teeth, longer than their basal width; declivity as long as the dorsum, steeply inclined, the stigmata at the base not very prominent. Petiole two and a-half times longer than its node is high, the latter with a fairly large dorsal face, which is as long as wide and bears posteriorly two long, subvertical and thin spines. The spines are longer than the node is wide and at least three times longer than their basal width. Abdomen very convex transversely, longer than wide, pointed towards the apex.

♀. 5·7 mm. Black, legs brownish, tarsi ochreous, mandibles ferruginous, antennae brown, the basal half of the scape more or less ochreous. Anterior third of the head with a fine, decumbent and whitish pubescence. Abdomen, legs and antennae densely pubescent, the pubescence closely adjacent on the abdomen and of a golden ochreous colour, somewhat pruinose; the apical margins with a few erect, short and blunt hairs. Whole body, including the legs and antennae, dull. Head and thorax very regularly coriaceous, the abdomen rugulose. Mandibles slightly shining, finely striate, sparsely and coarsely punctured. The shape of the head and thorax resembles that of *spinosior* ♀. The petiole without a long peduncle behind the scale, seen from the side cuneiform, higher than long, the upper edge convex transversely, unarmed. Deälated.

Hillside, Bulawayo. A very distinct and handsome species, easily recognised by the exceptionally long petiole in the ♀, and the pruinose-golden sheen on the abdomen of the ♀. (S.A.M., R.M., G.A. colls.; types in my collection.)

✓
A. ARENARIA, n. sp.

♂. 2·8–3·1 mm. Ochreous to dark amber-yellow, the head usually darker, at least in front, and of a more reddish-yellow colour. Apical halves of the 3rd and 4th and the whole of the 5th abdominal segments more or less black or brown, the apical third of the posterior femora and more or less the apical half of the posterior tibiae, and the last two tarsal joints of all the legs brown. Scapes and flagella infuscate near their apices, the last joint of the flagellum nearly black. Pubescence yellowish, very short, fine and sparse all over,

more abundant on the legs and antennae. Abdomen and anterior margin of the clypeus with erect whitish-yellow and fairly long pilose hairs, scanty.

Legs and antennae microscopically coriaceous and dull, mandibles very finely aciculate and dull, thorax dull and reticulate-granulate, excepting the pronotum and disc of mesonotum, which, like the head, are smooth and shining, with traces of an almost effaced reticulation; abdomen smooth and shining.

Head a little less than one-quarter longer than wide, hardly narrower in front than behind, the sides moderately convex, the hind margin straight. Clypeus distinctly convex transversely, obtusely

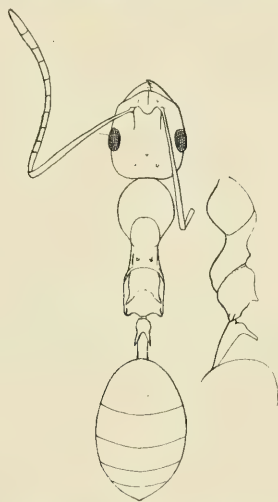


FIG. 56.—*A. arenaria*, n. sp.

subcarinate in the middle, the anterior margin convex. Mandibles, 5-dentate and very finely striate. Frontal area triangular, wider than long. Scapes long, extending back as far as the middle of the mesonotum, 2nd joint of the flagellum twice as long as wide, all the other joints longer. Eyes large and convex; traces of 3 ocelli present. Pronotum one-third wider than long, convex transversely above. Mesonotum oval, a trifle longer than wide, nearly one-third longer than the metanotum, from which it is indistinctly defined; metanotal stigmata placed in the middle, prominent in profile. Metaepinotal suture wide and deeply impressed. Dorsum of epinotum rising gradually towards the apex, a little wider there than at the base, wider than long, ending at each side in an acute tooth which is

as long as it is wide at its base; declivity oblique, about as long as the dorsum, produced at each angle below into a blunt tubercle, directed outwards, clearly visible when looked at obliquely from the side. Petiole like that of *A. longinoda*, but the node is narrower, less convex vertically in profile, and armed with longer and thinner spines, which are as long or nearly as long as the node is deep.

Sawmills, Umgusa River, S.R.

A very distinct species, most nearly allied to *A. longinoda*, but with a very different sculpture and colour. The nest was situated in loose yellowish sand, the colour of which so closely matched that of these insects as to render them almost invisible. A very agile and swift species.

(S.A.M., R.M., G.A. colls.; type in my collection.)

A. RUBROVARIA, Forel.

(As var. of *simplex*) Ann. Soc. Ent. Belg., vol. 54, p. 449, ♀, ♂, 1910.

This species differs from its race *pilosa* in being a little larger, in having a wider head, and in the absence of exerted pilosity on the scapes and tibiae.

In the ♂, which is 2 mm. long, the scape does not extend beyond the posterior margin of the head by more than one-third of its length. Basutoland (Wroughton). I have not seen the type-species, and the above characters are extracted from Forel's description of the race *pilosa*.

Race PILOSA, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 141, ♀, 1913.

♀. 1.7-1.9 mm. Head dark brown, thorax varying from yellowish-red to brownish brick-red, abdomen and petiole black. Scapes and first two joints of the flagellum dirty ochreous, the rest of the flagellum brown; legs brown, the articulations and the tarsi ochreous. Without sculpture, entirely smooth and shining. A whitish, short and fairly sparse pilosity on the body, scapes and legs. Head subquadrate, as long as wide, hardly narrowed in front, the sides moderately convex, the posterior margin shallowly emarginate in the middle. Eyes placed a little in front of the middle of the side. Scapes short, only just extending beyond the back of the head; 2nd and 3rd joints of the flagellum wider than long, 4th and 5th as wide as long, the remaining joints very little longer than wide. Mandibles tridentate, sparsely punctured and shining. Clypeus very convex in the middle, but not

carinate. Pronotum fairly flat above, about two-thirds wider than long in the middle. Meso-metanotum hardly longer than the pronotum; meso-metanotal suture feeble, the meta-epinotal stronger. Dorsum of epinotum rising from base to apex, the latter distinctly concave transversely between the teeth; the teeth small, divergent, merely prominent angles, the declivity as long as the dorsum, the stigmata below raised and subangular in profile. Petiole one-fourth longer than the scale is high, the peduncle as long as the scale, the latter inclined forwards, its posterior face convex transversely, the dorsal edge straight. Abdomen not very convex above, about one-third longer than wide, broadly ovate. Legs rather short.

Redbank, S. Rhodesia. On sandy soil; a few specimens taken on one occasion only, apparently a rare species. (R.M., G.A. colls.)

Race *PILOSA*, var. *AVUNCULUS*, n. v.

♂. 2.3-2.5 mm. Head and thorax ferruginous, petiole and abdomen piceous, the bases of all the segments more or less paler or reddish-brown. First 3 or 4 joints of the flagellum, the scapes, articulations of the legs, anterior tibiae and all the tarsi reddish-ochreous, the rest of the legs and flagellum reddish-brown. Erect pilosity longer and more abundant than in the type of the race. Smooth and very shining. Second and 3rd joints of the flagellum as long as wide, 4th and 5th a little longer than wide. Pronotum more convex transversely than in the type of the race, also narrower or not more than one-third wider than long in the middle. Mesonotum one-fourth wider than long and nearly twice as long as the metanotum (three-fifths wider than long and very little longer than the metanotum in the type of the race). Dorsal edge of scale thinner than in the type of the race, straight or slightly concave. Otherwise like the type of the race.

Sawmills, Umgusa River, S.R. (R.M., G.A. colls.; type in my collection.)

A. *ARNOLDI*, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 142, ♀, 1913.

♀. 1.7-2 mm. Dark reddish-ochreous (deep orange-yellow), the 3rd to 5th abdominal segments and the sides of the apical margins of 1st and 2nd brownish-black; the flagellum, excepting the 1st joint, yellowish-brown, becoming darker apically. Apical halves of the

middle and hind tibiae and femora brownish. Without sculpture entirely smooth and shining. Pilosity and pubescence similar to that of *rubrovaria-pilosa*. Very similar to that species, from which it differs by the colour and the following characters.

The head is narrower, about one-sixth longer than wide, narrower in front. The 2nd joint of the flagellum is as long as wide, the 3rd a trifle longer. The meso-metanotum is narrower, two-thirds longer than wide, and the dorsum of the epinotum is longer and flatter, the teeth blunter and smaller, merely tubercles. The scale of the petiole is feebly but distinctly emarginate above.

Redbank and Bulawayo, S. Rhodesia.

The nest is placed in loose sandy soil in the hottest situations. A very agile species. In one nest several ♂ ♀ were found which had the abdomen considerably swollen (as long as the head and thorax together), but not so rotund as in the *repletes* of *Myrmecocystus* or of *Plagiolepis Trimeni*. Probably the habit of using some of the members of the colony as storage-vessels for honey is only in the incipient stage in this genus.

A. FORELI, n. sp. (Plate VIII, fig. 121.)

♂. 1.6-1.9 mm. Head and thorax bright red (burnt sienna), abdomen dark brown, with the middle of the upper surface of the 1st and 2nd segments ochreous. Front pair of legs and the scapes ochreous, flagellum, middle and hind legs brownish, the tarsi ochreous. Entirely dull, the head and thorax microscopically rugulose or coriaceous. Pubescence whitish, decumbent and very sparse, more plentiful on the legs, head and antennae than elsewhere. Apical margins of the abdominal segments with a sparse, white, fairly short and obtuse pilosity. Head subquadrate, a little longer than wide, hardly narrowed in front, feebly emarginate behind, the sides feebly convex. Clypeus produced more forwards than in the two preceding species, hiding the closed mandibles, subcarinate. Eyes placed in the middle of the sides; the ocelli vestigial as in the two preceding species. The scapes just reach the posterior margin of the head; 2nd joint of flagellum wider than long, the 3rd as long as wide, all the remaining joints longer than wide. Pronotum like that of *pilosa*, but the meso- and metanotum are wider than in that race or in *Arnoldi*, the mesonotum being almost twice as wide as long. The stigmata of the metanotum only slightly prominent. Epinotum as in *Arnoldi*, but more concave between the tubercles, not inclined upwards posteriorly but horizontal or even slightly inclined downwards. The petiole is as long as the

scale is high ; the latter thin, inclined forwards, distinctly emarginate above. Abdomen longer than wide.

Sipapoma, S. Rhodesia. Running about on very hot sandy soil. (S.A.M., R.M., G.A. colls.; type in my collection.)

Var. IMPRESSA, n. v. ^v

♀. 1·7–2·2 mm. Apart from its more robust form and larger size, this differs from the type of the species as follows :

The colour is similar but darker in all parts. The thorax is wider, the mesonotum more convex transversely and the meta-epinotal suture deeper. The metanotum is not more than two-thirds the length of the mesonotum (quite as long in the type-species) and its stigmata are more prominent.

Hillside, Bulawayo; in similar situations as the type-species. (S.A.M., R.M., G.A. colls.; type in my collection.)

Var. CONVEXA, n. v. ^v

♀. 1·8 mm. Colour and sculpture as in *impressa*. The pubescence is longer and much more apparent than in that variety or in the type of the species. It differs from both by the narrower thorax, the pronotum more convex transversely; the dorsum of the epinotum is straight between the tubercles, not concave as in the type and var. *impressa*, and the tubercles are even smaller than in the type. The chief distinction lies in the shape of the scale of the petiole, which is thinner, much narrower and more convex above.

Hillside, Bulawayo. Type in my collection.

A. CRINITA, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 10, p. 149, ♀, 1895.

“♀. 2·4 mm. Black, the apical half of the mandibles, the antennae (excepting the apical fourth of the scape and the apical half of the flagellum), and the tarsi more or less bright reddish-brown or brownish-yellow. The whole body is abundantly clothed with long, whitish, exserted and not very thick, bristly hairs, the femora and tibiae with similar hairs, but only moderately long. A decumbent pubescence is not recognisable. Head, pronotum and mesonotum shining and nearly smooth, or partly and very superficially coriaceous and rugulose, the metanotum and sides of the mesonotum coarsely and longitudinally striate; the whole epinotum coarsely rugose and fairly dull; petiole and abdomen smooth and shining. The body is

thicker than in *capensis*, Mayr. The oval head, moderately emarginate behind, has the same shape as in *capensis*. The scape extends beyond the back of the head by about one-fourth of its length, the 2nd joint of flagellum is hardly half as long again as wide, the other joints longer. The pronotum, as in *capensis*, is not strongly arched. The constriction of the thorax is distinct, stronger than in *capensis*. The epinotum has two cones rounded at the apices and directed steeply outwards, upwards and backwards. The scale of the petiole has two pointed teeth above and is arcuately emarginate between them.

“Durban (Brauns).”

✓

A. SUBMETALLICA, n. sp.

♂. 3.2–3.8 mm. Black, femora blackish-brown, tibiae brown, tarsi brownish-yellow, flagellum brown, scape dirty ochreous, becoming brown towards the apex. Head and thorax with a greenish metallic lustre, not very pronounced, abdomen with a very evident violaceous or steely blue lustre. Pubescence present on the clypeus, lower surface of the head, legs and antennae only, fine and decumbent. The pilosity consists of long, thin, erect and white hairs, most abundant on the abdomen, absent from the legs and antennae. Legs dull, the whole body shining, especially the abdomen. Head almost smooth, at the most only microscopically reticulate. Pro-mesonotum very finely reticulate above or sometimes smooth, also with a few small piligerous punctures. Metanotum with 3 or 4 strong longitudinal rugae between the stigmatic tubercles; epinotum striated on the inner half of the lateral cones, the striae curving outwards posteriorly. Sides of meta- and epithorax longitudinally striate. Petiole and abdomen smooth. Head a little longer than wide, subovate, considerably narrowed in front, the posterior margin feebly concave, the posterior angles widely rounded. Clypeus carinate in the middle. Mandibles almost smooth, 5-dentate. Eyes large, placed at about the middle of the sides; ocelli vestigial. Antennae long; the scape extends beyond the back of the head by one-third of its length. 1st joint of flagellum as long as the 2nd and 3rd together, all the joints longer than wide. Pronotum distinctly flattened above and sloping forwards, two-thirds wider than long in the middle (excluding the neck). Pro-mesonotal suture deep. Mesonotum convex, large, as wide as long, at least twice as long as the metanotum. Meso-metanotal suture feeble. Dorsum of epinotum convex longitudinally, divided by a deep median groove into two lateral cones, divergent and ending in subdentiform points; declivity oblique, longer than the

dorsum, the stigmata below prominent. Petiole a little longer than its scale is high, the latter convex behind, flat in front, the dorsal edge emarginate and subdentate on each side of the emargination. Abdomen longer than wide, acute at the apex, rather large, very convex above. Legs long and slender.

♀. 5.8 mm. Black; femora and tibiae brown, mandibles, anterior margin of the clypeus, antennae and tarsi bright ferruginous. A metallic lustre is just visible in some lights, more or less bronzy on the head and mesonotum, faintly greenish on the epinotum and abdomen. Pilosity less abundant than in the ♂, almost entirely absent from the thorax; the pubescence is very abundant all over, longest on the scutellum, epinotum and abdomen, decumbent except on the scutellum and epinotum, where it is oblique. Whole body nitidulous, the abdomen somewhat duller than the rest, very closely and regularly punctured. The punctures are piligerous, finest and most abundant on the abdomen, fairly fine on the scutellum, large and deep on the mesonotum and back of the head; the epinotum is obliquely striate, punctured between the striae. Mandibles shining, sparsely and coarsely punctured. Head subtriangular, as long as wide behind. Clypeus carinate on the anterior half of the median area. Scapes very long, extending beyond the back of the head by half their length. Mesonotum with a shallow transverse impression a little in front of its basal margin, and a median longitudinal and impunctate line extending from front to back; parapsidal sutures clearly defined. The dorsum and declivity of the epinotum form a single oblique plane, bearing a small tubercle on each side above; the extreme apex of the epinotum, facing the petiole, is shining and impunctate. Petiole longer than wide, convex from side to side above. Abdomen elongate, twice as long as wide. Wings tinged with brown, the nervures and stigma dark brown.

♂. 2.8 mm. Dark brown, the thorax paler than the head and abdomen and with yellowish-brown sides, antennae, legs and mandibles pale ochreous. Very shining. Pilosity and pubescence sparse, the former much shorter than in the ♀ or ♂. Exceedingly finely and sparsely punctured. Abdomen impunctate. Head subcircular, a little wider than long, nearly as wide as the thorax. The eyes occupy the anterior two-thirds of the sides; the distance between the posterior ocelli is twice as great as the distance between them and the anterior ocellus. The scape is two-thirds as long as the flagellum, and extends by a good deal more than half its length beyond the back of the head. Epinotum with a small tubercle on each side above, as in the ♀. Scale of petiole thick, almost half as thick as wide across the top, the

dorsal edge straight and furnished at each corner with a minute sub-acute tubercle. Wings as in the ♀, but paler.

Bulawayo.

Forming fairly populous nests in the ground, the entrances surrounded by a large amount of excavated material, more or less crateriform.

A very distinct species, easily recognised by the metallic lustre and by the deeply-divided epinotum in the ♀, and by the long scapes in the ♀ and ♂. Excluding some species of *Monomorium* (in which, however, there is a slight suggestion of a metallic sheen on the abdomen only) this is the only South African ant which has a metallic lustre. In the Australian fauna, on the other hand, this feature is quite common in many genera of Formicidae and of other Hymenoptera.

(S.A.M., R.M., G.A. colls.; types in my collection.)

↓
Var. ASPERA, n. v.

♀. This differs from the type of the species only in having the head and pro-mesonotum very finely rugulose and dull, and in the less pronounced greenish tinge. The abdomen, however, has the same violaceous lustre as the type.

Amatongas Forest, Portuguese E.A. (S.A.M., R.M., G.A. colls.; type in my collection.)

A. CAPENSIS, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 699, ♀, 1862.

Reise der Novara, Zool. 2, Formicid., p. 56, ♂, 1865.

Emery, Ann. Mus. Civ. Genoa, vol. 9, p. 366, ♀, 1877.

“♀. 2·8–3·3 mm. Shining, sparsely hirsute, black, the mandibles, legs and antennae brown, the mandibles sparsely striate longitudinally. Head and thorax very finely, superficially and coriaceously rugulose, almost smooth. The 1st joint of the flagellum twice as long as the 2nd. Epinotum with 2 blunt teeth. Scale of petiole bidentate above, strongly emarginate between the teeth. Abdomen almost smooth. The body much more compressed or narrower than in *A. Frauenfeldi*, Mayr.

“Cape of Good Hope.”

The only examples of the type-species which I have seen are a few (ex S.A.M. coll.) which have been determined as such by Dr. Forel. They agree with Mayr's description in all but colour, which is dark

brown, the abdomen reddish-brown. This may be due to exposure and consequent bleaching, since the specimens were collected in 1899. Mayr's diagnosis of the species being so short, I append a fuller one, based on these specimens.

♀. Pilosity brown, very short and sparse. Head, pro-mesonotum, petiole and abdomen shining and smooth (at the most only with a microscopical sculpture); meta- and epinotum finely rugulose and dull. Head subovate, widest behind, as wide as long, the posterior margin straight, the posterior angles widely rounded. Eyes barely convex, rather large, placed a little behind the middle of the sides. Scapes extending beyond the posterior margin by very little more than one-third of their length; 1st joint of flagellum twice or a little more than twice as long as the 2nd, the latter as long as wide, all the remaining joints longer than wide. Clypeus obtusely carinate, the anterior margin convex. Pronotum one and a-half times wider than long in the middle, its anterior half somewhat flattened. Mesonotum a trifle wider than long, one-third longer than the metanotum. Mesometanotal suture not deep. Metanotum widening posteriorly, twice as wide behind as in front. Meta-epinotal suture fairly deep. Dorsum of epinotum ending in a blunt cone on each side, between the cones feebly concave transversely, hardly convex lengthwise; the declivity as long as the dorsum. The posterior face of the scale of the petiole a little convex transversely, the anterior face flat, bidentate above (the teeth small, shorter than the interval between them), emarginate between the teeth. The whole petiole is about as long as the scale is high.

“ ♂. 3 mm. Brownish-black, fairly shining, clypeus, scape, tibiae, femora and abdomen brown; flagellum, tarsi and mandibles more or less brownish-yellow, the genital armature partly brown, partly brownish-yellow. The pilosity is sparse; on the head, thorax and base of abdomen there are only a few isolated hairs, the end of the abdomen more abundantly pilose, the legs without pilosity. Pubescence yellow, fairly fine and not abundant, most plentiful on the legs. Head triangular, with strongly-rounded corners, fairly smooth, very slightly rugulose or rugulose-punctate. Mandibles flattened, very shining, feebly rugulose, 4-dentate. . . . The clypeus like that of the ♀. Frontal area large, triangular, not clearly defined behind. Antennae 12-jointed, . . . scape long and thin, the flagellum thicker, the 1st joint nearly twice as long as the 2nd, which is the shortest, the remaining joints becoming gradually longer in succession towards the apex. Frontal carinae fairly short, straight and parallel. The frontal sulcus not distinct. Eyes large, hemispherical, placed at

about the middle of the sides. The thorax is more closely rugulose-punctate and less shining than the head and abdomen, and is about as high as wide; the pronotum is very narrow, and the mesonotum projects over it a little. The epinotum is steep, feebly convex, the dorsum and declivity not clearly delimited. The scale is small and strongly inclined forwards. The abdomen is sparsely rugulose-punctate and about as large as the thorax, . . . The wings are large, almost hyaline, nervures brown, the anterior wing with 1 cubital cell, but without a closed discoidal-cell. . . ."

♀. I omit Emery's description of this sex, as it is too short to be of any value for purposes of identification.

Var. *VALIDIUSCULA*, Emery.

Ann. Mus. Civ. Genoa, vol. 18, p. 602, ♀, 1897.

♀. 2·8–3·3 mm. Jet black, the tarsi and flagellum brown, the tibiae and femora brownish-black, the scape ochreous-yellow with the apical 3rd or 4th brownish. Sometimes the legs and flagellum are paler, and the head more or less brownish-black. The chief distinction between this variety and the type of the species lies in the greater length of the scape, which extends beyond the back of the head by almost half its length, and by the pilosity, which is much longer, coarser (more bristly) and more abundant, particularly on the pronotum and back of the head. The epinotum is as a rule less flat above, being very shallowly excavated in the middle almost to its base, and the lateral cones more divergent and larger. Mesonotum as long as wide, rarely so short as in the type-species.

I refer to this variety a large number of specimens derived from different parts of South Africa. Some of these exhibit a slight amount of variation in minor details, such as the sculpture and degree of opacity of the meta- and epinotum, and the pilosity.

♀. 4·6–5 mm. Dark brown, the head and thorax almost black, legs, basal half of the scapes and flagellum paler brown, the tarsi and mandibles ochreous. Pubescence dense, very fine, adpressed and of a pale greyish-yellow; the pilosity composed of short, yellowish hairs, present only on the abdomen and clypeus. Head and mesonotum very finely and fairly closely punctured, the scutellum rather sparsely punctured. Epinotum closely striato-rugulose, transversely so on the declivity. Head and thorax with a very slight gloss, almost dull. Abdomen dull, microscopically punctate-rugulose. Head subtriangular, as long as wide, the posterior angles widely

rounded. Clypeus very convex and raised in the middle, but not distinctly carinate. Mandibles smooth and shining, sparsely and very finely punctured. Eyes not very convex, placed a little behind the middle, occupying about a third of the sides. Ocelli placed far back, close to the occipital margin. The scape extends beyond the back of the head by about one-fourth of its length, all the joints of the flagellum longer than wide. Thorax about one-third wider than the head. The pronotum is slightly exposed in the middle above. Mesonotum one-third wider than long, the scutellum half as long as the mesonotum and sloping downwards gradually behind. Dorsum and declivity of epinotum not distinctly delimited, forming a single vertical plane which is feebly convex above. Scale of petiole as wide as high, its dorsal edge almost linear. Abdomen one-third longer than wide, oval, all the segments much wider than long. Wings dirty ochreous, the nervures brown, the stigma pale yellowish-brown.

♂. 2.7 mm. Black, femora, tibiae and scapes brown, tarsi and flagellum pale ochreous. Smooth and shining. Pubescence very fine, fairly abundant, longer and less decumbent than in the ♀, intermixed on the mesonotum with a short, dense and bristly pile of a blackish colour. Apex of abdomen, the epinotum and back of the head with some longer and brownish pilose hairs. Head, including the mandibles, having the shape of an isosceles triangle, much narrower in front of the eyes than behind them. Clypeus with an elongate median tubercle. Eyes convex, occupying about one-third of the sides of the head. Scapes extending beyond the posterior margin by about one-third of their length; 2nd-7th joints of the flagellum less than half as long again as wide. Mesonotum very convex in front, one-fourth wider than long. Scutellum longer and narrower posteriorly than in the ♀, three-fifths the length of the mesonotum. Scale of petiole widest above, wider than high, the dorsal edge fairly thick, not linear as in the ♀. Abdomen ovate, the genital armature large and exserted. Wings brownish, the nervures and stigma dark brown.

The ♀♀ taken with the ♂♂ from which the above description is derived differ slightly from those taken with the ♀, the dorsum of the epinotum being more convex, but I do not consider that difference sufficient to enable me to regard these ♂♂ as belonging to anything but the var. *validiuscula*.

S. Rhodesia and Cape Province. Generally distributed and very common. Nesting usually under stones; an industrious attendant on Aphididae and Coccidae. (S.A.M., R.M., G.A. colls.)

Var. SIMPLICOIDES, Forel.

Voeltzkow's Reise Ost Afrika, vol. 2, p. 86, ♀, 1907.

"A form transitional to *simplex*, Forel, with blunt and wide epinotal teeth, and with the scale only emarginate, barely dentate. Basutoland (Wroughton). This form proves that *simplex* is only a race of *capensis*."

Var. MINUTA, Forel.

Rev. Suisse Zool. vol. 24, p. 438, ♀, 1916.

"♀. 1.5 mm. Differs from the type, apart from its very small size, by its more robust build and by the short scapes, which extend beyond the hind margin of the head by barely as much as their apical width. It differs from var. *laevis*, Santschi, by its jet-black colour and wider head.

"Shiluvane, Transvaal (Junod)."

Race JUNODI, Forel.

Loc. cit., ♀, p. 438.

"♀. 2.5-2.8 mm. Differs from the race *incisa*, Forel, like which it has a bispinose scale, by the legs and scapes covered with white subdecumbent hairs, by the yellowish and fairly pointed hairs on the body, by its much wider head, by the shorter scapes which extend beyond the head by barely one-fourth of their length, and by the less deep incision of the thorax. It differs from *curta*, Emery, by the spines on the scale and by its narrower head.

"Shiluvane, Transvaal (Junod)."

Race SIMPLEX, Forel.

Ann. Soc. Ent. Belg., vol. 36, p. 43, ♀, 1892.

Mitth. Schweiz. Ent. Ges., vol. 8, p. 350, ♀, ♂, 1892.

♀. 2.4-2.8 mm. This race differs from the type of the species as follows:

The pilosity on the abdomen is much longer, finer and more abundant. The meso-metanotum is slightly narrower and longer. The meta- and epinotum are nitidulous and very feebly sculptured. The scale of the petiole is shallowly emarginate above and without teeth at each corner of the emargination. Forel says that an additional distinction exists in the shape of the epinotum, in which

the brow of the declivity is straight transversely, not concave as in the type-species. This difference is not recognisable in the specimens determined for me as *simplex* by Dr. Forel.

“♂. 2 mm. Smooth, shining (in *capensis* there is some sculpture on the thorax, especially on the epinotum). Sparsely hirsute. Scale low. Brownish, the legs paler. Wings fairly clear, with pale nervures and stigma. The mandibles have 4 or 5 minute teeth and are fairly long.”

Bulawayo; Grahamstown (Baines and Cherry). (S.A.M., R.M., G.A. colls.)

Race *LAEVIS*, Santschi, var. *ALEXIS*, n. v.

(Race) Ann. Soc. Ent. Belg., vol. 57, p. 312, ♀, 1913.

Bull. Lab. Zool. Sc. Agr. Portici, vol. 8, p. 378, 1914.

♀. 2 mm. This differs from race *simplex* as follows:

Entirely smooth and shining, except a slight roughening of the dorsum of the epinotum and the lateral margins of the disc of the mesonotum. Pubescence adjacent, short and very sparse. Pilosity scanty, almost absent from the head and thorax, composed of whitish short and blunt hairs. The scape extends beyond the posterior margin of the head by one-third of its length; 1st joint of the flagellum as long as the 2nd and 3rd together (shorter in *simplex*), 2nd joint a trifle longer than wide, the 3rd one-fourth longer than wide. Pronotum convex transversely (a little flattened in *simplex*), as long as wide, the pro-mesonotal suture distinct. Mesonotum more convex than in *simplex*, the lateral cones of the epinotum less prominent and a little more acute. The scale of the petiole is more deeply emarginate, almost bidentate at the corners.

It differs from *laevis* by the dull and striated mandibles, by the pronotum, which is quite one and a-half times wider than long, by the subdentate scale, and its slightly larger size. From var. *minuta*, Forel, it differs by the much longer scapes. Colour as in *simplex*.

Hillside, Bulawayo. Nesting in the ground. (R.M., G.A. colls.; type in my collection.)

Race *HIRSUTA*, Santschi, var. *ELEVATA*, Forel.

(Race) Voyage d'Alluaud et Jeannel, Formicid., p. 124, ♀, 1914.

(Var.) Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 249, ♀, 1914.

♀. 2.8–3.3 mm. Jet black, tibiae brown, tarsi yellowish-brown, basal half of the scape ochreous. Pilosity long, thin and whitish on

the thorax and abdomen, shorter and brownish-white on the head, most abundant on the abdomen and epinotum, oblique and fairly long on the legs and scapes. Smooth and shining, except the meta- and epinotum, which are a little less shining and also coarsely and irregularly rugose, the rugae extending over the declivity. The sides of the epinotum are finely and longitudinally striate and somewhat dull. On the sides of the meso- and metathorax there are 2 or 3 very strong longitudinal rugae. The mesonotum, seen from above, is subquadrate, parallel-sided, the anterior margin nearly straight in the middle, not convex as in *capensis*, i. sp., *simplex* and *convexiuscula*, a trifle wider than long. The meso-metanotal and meta-epinotal sutures strongly clathrate. The metanotum is about half as long as the mesonotum and twice as wide as long. The epinotal teeth are raised towards their apices, more divergent than in *capensis*, directed more outwardly, and projecting over the sides of the epinotum when looked at direct from above. The declivity is longer than the dorsum; the latter seen from the side is straight. The petiole is as long as its scale is high, both the scale and its posterior peduncle fairly thick. The scale is bidentate above (the teeth narrow and acute), emarginate between the teeth. Abdomen rather large; high and very convex at the base.

Nesting under a stone. Hillside, Bulawayo. (S.A.M., R.M., G.A. colls.)

A. EGREGIA, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 143, ♀, 1913.

♀. 3-3.4 mm. Closely allied to *capensis-validiuscula* and possibly only an extreme form of *capensis*. Black, tibiae and antennae brown, tarsi pale brown, basal three-fourths of the scape ochreous, mandibles reddish-yellow. Pilosity scanty, composed of thin, long and dark brown hairs on the abdomen, somewhat thicker and shorter on the head and thorax. Posterior half of the head with a very sparse, pale and decumbent pubescence. Very shining. The sculpture similar to that of *validiuscula* but a little stronger, composed of a very fine and altogether superficial reticulation; a little coarser on the dorsum of the epinotum, which is also duller than the rest of the thorax. The sides of the meso- and metathorax longitudinally striate, the sides of the epinotum rugulose. Head like that of *validiuscula*. Mesonotum as long as wide, the anterior margin semi-circular; metanotum as long as wide, quadrate, very little shorter than the mesonotum, with prominent stigmatic tubercles (in *validiuscula* and

capensis, i. sp., the metanotum is much wider than long, and widened considerably towards the base). Meso-metanotal impression wider and shallower than in *validiuscula*. The meta-epinotal suture deep, much deeper than in *validiuscula*. The dorsum of the epinotum is moderately concave transversely and convex lengthwise. It rises more steeply from its base than in *capensis* and its varieties. The teeth are more angular than in that species and directed more distinctly upwards. The brow of the declivity is strongly concave transversely; the upper two-thirds of the declivity vertical or nearly so, the lower third oblique or subhorizontal, with a very prominent and dentiform stigma on each side. Petiole about as long as its scale is high, the peduncle behind shorter than its scale and shorter than in *capensis*. The scale is much thicker, especially at its base; above it is bidentate and deeply emarginate between the teeth, the latter short and fairly acute (in some specimens the teeth are very short and almost blunt).

Redbank, S. Rhodesia. (S.A.M., R.M., G.A. colls.)

Race *SANTSCHII*, subsp. n.

♀. 4 mm. Head subcircular, excluding the mandibles only a very little longer than wide, not narrower in front than behind (distinctly narrowed in front in the type). Pilosity much coarser, thicker and longer, more abundant on the back of the head and on the thorax than in the type. The femora have some exserted pilose hairs, which are absent in the type. The scape is longer, distinctly more than half its length extending beyond the hind margin of the head (hardly half in the type); 1st joint of the flagellum one-third longer than the 2nd (nearly twice as long as the 2nd in the type). The meso-metanotum is narrower and there is no distinct suture between the two segments as in the type-species, only a long and fairly deep concavity. Epinotum like that of the type-species. Peduncle of petiole as long as the base of the scale. The latter is thicker above than in the type and its posterior face is strongly convex transversely (almost flat in *egregia*, i. sp.). The eyes are relatively larger and more convex.

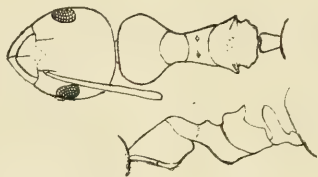
Cawston Farm, Umgusa, S. Rhodesia.

Easily distinguished from *egregia* type by its larger size, coarser and more abundant pilosity, which is present also on the femora, by the shape of the head and by the longer antennae. Possibly this form should rank as a distinct species.

Type in my collection.

A. SILVICOLA, n. sp.

♀. 3.4-3.8 mm. Head dark reddish-brown, thorax and petiole piceous, abdomen black, tarsi brownish-yellow, flagellum and scapes brown, the basal two-thirds of the latter dark ochreous. Legs, petiole and abdomen shining, the rest of the body dull. Pilosity yellowish, long, exserted, fairly abundant all over including the legs and scapes, present also on the edge of the scale, longest and most plentiful on the head and abdomen. A scanty and decumbent pubescence on the mandibles, flagellum and legs. Head, pronotum, epinotum and dorsum of the meso-metanotum very finely and densely granulate, the sides of the meso-metanotum sharply and longitudinally striate, the lower angles and margin of the epinotum smooth and shining. Scale smooth. Abdomen microscopically reticulate, finely punctured. Head, including the closed mandibles, subcircular, a trifle longer than wide. Eyes very

FIG. 57.—*Acantholepis silvicola*, n. sp.

large, placed just in front of the middle of the sides. Clypeus convex, its anterior margin arcuate, sharply carinate in the middle over the anterior two-thirds of its length. Mandibles 6-dentate, finely and closely striate. The scapes extend beyond the hind margin of the head by a little less than half their length. Head one-third wider than the pronotum. The latter is two-thirds wider than long, distinctly flattened above, its sides very convex. The thorax is strongly constricted at the mesonotum, which is barely half as wide as the pronotum and about as wide as long. Metanotum widened posteriorly, two-thirds as long in the middle as the mesonotum, separated from the latter by a wide and deep depression. Metanotal stigmata very prominent, sub-conical when seen in profile. Meta-epinotal suture deep. The dorsum of the epinotum rises abruptly and vertically from the suture, and is thence continued backwards and inclined upwards towards the posterior margin, which bears on each side a large and broad tubercle. Seen from the side these tubercles appear as wide and upturned teeth. Across the apices of the tubercles the dorsum of the epinotum is three times as wide as it is long in the middle. The declivity is wide and oblique, longer than the dorsum. In front of the tubercles the dorsum

is slightly concave transversely. Petiole higher than long below, its scale inclined forwards. The dorsal edge of the scale is fairly thick and slightly emarginate in the middle; the anterior face of the scale is convex from above to below, the posterior face concave. Abdomen massive, subovate, very little longer than wide.

♀. 6 mm. Anterior wing 6.5 mm. long. Colour as in the ♂, but the anterior angles of the head and the greater part of the clypeus castaneous. An abundant, very fine, long and yellowish pubescence present all over, oblique on the cheeks behind the eyes, decumbent elsewhere. Pilosity yellowish, fairly abundant, outstanding, very short on the mesonotum. Head dull, thorax and abdomen moderately shining.

Head and upper two-thirds of the epinotum finely and densely punctate and aciculate. Mesonotum and scutellum densely and fairly coarsely punctured, the abdomen and legs very finely and densely punctured. Scale smooth and shining.

Head quadrate, as wide as long, slightly narrowed in front, the posterior margin straight, the posterior angles rounded. The eyes occupy the middle third of the sides. Mandibles and clypeus as in the ♂. The scapes extend beyond the hind margin of the head by one-third of their length. Mesonotum one-third wider than long. Scutellum semi-circular, half as long as the mesonotum. Dorsum of the epinotum obsolete, the declivity subvertical. Scale much wider and thinner above than in the ♂, its dorsal edge trenchant and feebly excised in the middle. Abdomen oblong, half as long again as wide. Wings brownish-yellow, nervures brown.

♂. 3.3 mm. Dark brown, scutellum, epinotum and petiole reddish-brown, tarsi ochreous, femora ochreous at the base and apex and brown in the middle, mandibles and antennae smoky yellow. Shining. Mesonotum and abdomen very finely punctured, clypeus and sides of the head, between the eyes and frontal carinae, finely reticulate-punctate, the rest of the body smooth. Mandibles dull, 3-dentate and aciculate.

Head as long as wide across the eyes, the sides behind the eyes and also the posterior margin straight, narrower behind than in front. The eyes occupy the middle third of the sides. Clypeus two and a quarter times wider than long in the middle, carinate. The scapes extend beyond the hind margin of the head by one-third of their length. Thorax like that of the ♀, but the upper face of the epinotum is oblique. Scale, seen from behind, trapezoidal, as long as wide above, where it is widest, the dorsal edge thin, the posterior face twice as long as the anterior and feebly convex from above to below. Base of abdomen concave transversely. Wings as in the ♀.

Amatongas Forest, Portuguese E. A. (S.A.M., R.M., G.A. colls.; types in my collection.)

Nesting in a decayed tree-stump in the shadiest part of the forest. This species is unlike any other of the genus known to me. The remarkably deep impressions in front and behind the metanotum and the peculiar shape of the epinotum are very distinctive.

GENUS *PLAGIOLEPIS*, Mayr.

Europ. Formicid., p. 42, 1861.

Characters.

♀. Sometimes polymorphic, the forms differing chiefly in size, very little in structure. Antennae 11*-jointed, without a club. Scape as long as the head or longer. Clypeus large. Frontal carinae short; frontal area not well defined. Traces of the ocelli are present. Pronotum and epinotum large, usually much wider than the rest of the thorax. Pro-mesonotal suture distinct; meso-metanotal and meta-epinotal sutures more or less distinct. Epinotum unarmed. Scale of petiole usually inclined forwards, without a peduncle or with only a very short one.

♀. Antennae 11*-jointed. Thorax similar to that of *Acantholepis* ♀, but broader and shorter. Petiole as in the ♀. Abdomen usually very massive. Wings with a closed radial and one cubital cell; discoidal cell absent.

♂. Antennae 12-jointed, the scape at least half as long as the flagellum. Genital armature large and exerted.

Distribution.—Both hemispheres.

The genus may be divided into the following sub-genera:

- (4) 1. Metanotum distinctly defined in front and behind.
- (3) 2. ♀. Metanotum very prominent, separated from the short and convex epinotum by a deep suture; the epinotum higher than the metanotum. Rarely polymorphic (a sub-genus transitional to the genus *Acantholepis*). Sub-genus *Anacantholepis*, Santschi.
- (2) 3. ♀. Metanotum not prominent; meta-epinotal suture usually feeble; epinotum oblique, not higher or not much higher than the metanotum. Small species, not polymorphic.
 - ♀. Not much larger than the ♀, but considerably larger than the ♂.
 - ♂. Scapes not much longer than the head, the latter wider than long.

Sub-genus *Plagiolepis*, Mayr, s. str.
- (1) 4. Metanotum indistinctly defined or almost obsolete.
- (6) 5. ♀. Metanotum small, much smaller than the mesonotum, from which it is feebly delimited; epinotum convex and higher than the metanotum. Large species, often polymorphic.
 - ♀. Not very much larger than the ♀ major or the ♂.

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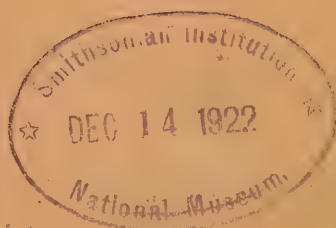
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Curator of the Rhodesia Museum. Bulawayo, pp. 579-674.



ISSUED OCTOBER, 1922. PRICE 5s.

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- ♂. Scapes long, much longer than the head; the head as long as, or longer than wide . . . Sub-genus *Zealleyella*, Arnold, n. s.-g.*
- (5) 6. ♀. Meso-metanotal suture obsolete, the meta-epinotal suture very feeble. Dorsum of epinotum not very convex, not higher, or very little higher than the mesonotum. (head hardly narrower in front than behind; 2nd joint of the flagellum much shorter than the 1st). In some, if not all species, some of the ♀♀ are used as honey-storage vessels, and have the abdomen thereby abnormally distended.
- ♀. Not much larger than the ♂. Sub-genus *Anoplolepis*, Santschi.

* I had originally erected this sub-genus to include the species *Trimeni*, *deceptor*, *Macgregori*, *decolor* and *melanaria*. Fortunately before the revision of the type-script of these pages had been completed, I received a letter from Dr. Santschi, in which he points out that the type of his sub-genus *Anoplolepis* is precisely the Indian species, *P. longipes* Jerdon, in which the metanotum is not delimited from the mesonotum. In this character, *longipes* agrees with the five species mentioned above, although in the elongate and constricted form of the mesonotum it differs very considerably from any of them. However, as it seems to me that the absence of the meso-metanotal suture is a feature to which greater importance should be attached, the five species should be placed with *longipes* in the sub-genus *Anoplolepis*. On the other hand, it is quite clear that the species *custodiens*, *Steingroeveri* and *Braunsi* which were cited by Santschi as belonging to his new sub-genus (see Voyage de Alluaud et Jeannel, p. 123, 1914) can not be attached to the same group as *longipes*, and I therefore propose to transfer the name *Zealleyella* to a new sub-genus to include those three species. I have much pleasure in naming this sub-genus in honour of my friend the late Mr. A. E. V. Zealley, of the Geological Survey of S. Rhodesia and formerly Curator of the Rhodesia Museum.

Key to the species of Plagirolepis, ♀♀,
(repletes or honey-vessels not included).

- (10) 1. Metanotum small, much less than half as long as the mesonotum, the meso-metanotal suture feeble or obsolete, at least in the ♀♀ minima, (sub-genus *Zealleyella*).
- (7) 2. Epinotum very convex and much higher than the meso-metanotum; ♀♀ usually polymorphic.
- (4) 3. Thorax (and abdomen) dull, clothed with a dense, decumbent and rather silky pubescence *custodiens*, Smith.
- (3) 4. Thorax more or less shining, at least the pronotum; with a sparse pubescence or none at all.
- (6) 5. ♀ major: scale of petiole thinner above than below; sides of head distinctly convex. ♀ minor: whole body moderately shining, particularly the head and pronotum; meso-metanotal suture feeble
Steingroeveri, Forel.
- (5) 6. ♀ major: scale as thick above as below; sides of head only slightly convex; ♀ minor: body very shining; meso-metanotal suture stronger
Braunsi, Forel.

- (2) 7. Epinotum not very convex or gibbous, not higher than the meso-metanotum; ♀♀ all of the same size, excepting some which are used as honey-storage vessels and have the abdomen artificially distended, (sub-genus *Anoplolepis*).
- (11) 8. Scapes barely extending beyond the hind margin of the head; the head as wide as long, only in the smallest workers a trifle (1/10th) longer than wide.
- (10) 9. Mesonotum wider than long; colour more or less ochreous
Trimeni, Forel.
- (9) 10. Mesonotum longer than wide; colour dark brown *Macgregori*, Arnold.
- (8) 11. Scapes extending beyond the hind margin of the head by at least one-fifth of their length; head at least one-sixth longer than wide.
- (13) 12. Sculpture of head and thorax distinct, reticulate-punctate
deceptor, Arnold.
- (12) 13. Sculpture feeble, merely rugulose.
- (15) 14. Fairly shining; colour and pilosity black . . . *melanaria*, Arnold.
- (14) 15. Dull; colour and pilosity more or less ochreous
Trimeni, var. *karrooensis*, Arnold.
- (1) 16. Metanotum at least half as long as the mesonotum.
- (28) 17. Metanotum very prominent, separated from the mesonotum by a deep and wide concavity, and from the epinotum by a strong suture, (sub genus *Anacantholepis*).
- (21) 18. Scapes extend beyond the hind margin of the head by at least one-fourth of their length.
- (20) 19. Scapes extend beyond the hind margin by about four-fifths of their length; thorax black . . . *Deweti*, Forel.
- (19) 20. Scapes extend beyond the hind margin by a little more than one-fourth of their length; thorax testaceous
Van den Kelleni, Forel, race *polita*, Sants.
- (18) 21. Scapes much shorter.
- (23) 22. Head and thorax dull; the scape barely extends beyond the hind margin of the head . . . *Van den Kelleni*, Forel.
- (22) 23. Head and thorax shining, or at least not quite dull; scape longer.
- (25) 24. Colour entirely black . . . *Jouberti*, Forel.
- (24) 25. Colour partly red or yellow.
- (27) 26. Head and thorax only slightly shining
Van den Kelleni, var. *tricolor*, Forel.
- (26) 27. Head and thorax very shining . . . *decora*, Santschi.
- (17) 28. Metanotum not very prominent, separated by narrow sutures from both the meso- and the epinotum; or, if the meso-metanotal suture is large, then the metanotum is not prominent (*Brunni*). (sub-genus *Plagiolepis* s.str.).
- (34) 29. Meso-metanotal and meta-epinotal sutures moderately distinct.
- (33) 30. The scape extends beyond the hind margin of the head by at least one-fifth of its length.
- (32) 31. Meta- and epinotum transversely rugulose and dull; meso-metanotal suture not deep . . . *pygmaea*, var. *bulawayensis*, Arnold.
- (31) 32. Meta- and epinotum smooth and shining; meso-metanotal suture deep
pygmaea, var. *intermedia*, Emery.

- (30) 33. The scape just reaches the hind margin of the head *pygmaea*, Latr.
 (29) 34. Meta-epinotal suture very shallow; the scape barely extends beyond the hind margin of the head.
 (38) 35. Colour chiefly brown or brownish red, at least the abdomen brown.
 (37) 36. Thorax dark ochreous . . . *pygmaea*, var. *mima*, Arnold.
 (36) 37. Thorax brown or reddish brown . . . *pygmaea*, var. *punctum*, Forel.
 (35) 38. Colour mainly dark orange-ochreous, only with blackish patches here and there, chiefly on the abdomen.
 (40) 39. Pubescence fairly abundant, especially on the abdomen and the sides of the head . . . *Brunni*, var. *pubescens*, Forel.
 (39) 40. Pubescence scanty, almost wanting on the abdomen *Brunni*, Mayr.

P. rufescens Santschi, *P. fuscule* Emery and *P. decolor* Emery being unknown to me in nature, are not included in the above key; *P. capensis* Mayr is a synonym of *Acantholepis capensis*. Mayr. *P. nuptialis* Santschi is known only in the ♂ sex, and cannot therefore be included in the key.

SUB-GENUS ANACANTHOLEPIS, Santschi.

Göteborgs Kungl. Vetens. och Vitterh. Handl. XV, 2. p. 36, 1914.

For characters see table of sub-genera.

P. (sub-gen. ANACANTHOLEPIS) DECORA, Santschi.

Loc. cit., p. 36, ♀.

♀. 1.6–1.8 mm. Bright ochreous or amber yellow, the head with a reddish tinge in many specimens. Cheeks in front of the eyes, the apical third or more of the flagellum, the bases of the femora, the peduncle of the petiole and a spot on the sides of the first two abdominal segments brown. The spots on the abdomen are variable in size, sometimes limited to a triangular patch near the apical margin, and in other cases covering the whole of the sides of the segments. Smooth and shining, only the antennae slightly dull. A microscopic pubescence on the antennae, and a few brownish, sub-erect hairs on the margins of the abdominal segments, otherwise almost glabrous. Head subrectangular, with the corners widely rounded, the sides and posterior margin moderately convex, one fifth longer than wide. Eyes placed well in front of the middle of the sides. Clypeus and its anterior margin convex. The scape extends beyond the posterior margin of the head by a little less than the length of the 1st joint of the flagellum; the latter is longer than the 2nd and 3rd joints taken together. Pronotum convex, about as long

as wide, forming with the mesonotum a convexity which is a little higher behind than in front. Mesonotum a little wider than long, as long as the metanotum, from which it is separated by a deep suture. The metanotum, seen in profile, is angular, the stigmata placed at the apex of the angle, the anterior plane a little longer than the subvertical posterior plane. Meta-epinotal suture fairly deep. Epinotum convex, the dorsum twice as wide as long. Scale sub-ovate, rounded transversely above, as high as the petiole is long.

♀. 3.3 mm. (hitherto undescribed). Dark brown, the mandibles, antennae and legs brownish ochreous, the femora somewhat darker or yellowish brown. Head, thorax and petiole shining, the abdomen moderately so, the legs and antennae subopaque. Clothed with a very fine, decumbent greyish yellow pubescence, which is most abundant on the abdomen, and rather scanty on the dorsum of the thorax. Apical margins of the abdominal segments with a few long brown hairs.

Head and abdomen closely and microscopically punctured, the vertex rather sparsely, the thorax almost impunctate above. Head subquadrate, hardly narrowed in front, the posterior angles narrowly rounded, the posterior margin shallowly concave in the middle. Mesonotum and scutellum flat above; the former is as long as wide between the tegulae, the scutellum a little less than half as long as the mesonotum. The dorsum and declivity of the epinotum form a single oblique plane when seen in profile. Scale of petiole wider above than below, nearly as wide as high, the anterior face convex transversely, inclined forwards. Deälated.

Stamford Hill, Natal (Traegaardh); Durban, (Arnold, Bell-Marley).

The examples in my collection had been erroneously determined by Dr. Forel as *P. Brunni* Mayr, to which they bear a very strong likeness, but from which they may be easily distinguished by their larger size and by the very different structure of the thorax. (S.A.M., R.M., G.A. colls.; type of ♀ in my collection).

P. (sub-gen. ANACANTHOLEPIS) DEWETI, Forel.

Ann. Soc. Ent. Belg. vol. 48, p. 423, ♂, ♀. 1904.

♂. 2.5-2.7 mm. Mandibles Smooth, shining, with a few large punctures, armed with 5 or 6 unequal teeth. Clypeus subcarinate, the anterior margin convex. Frontal carinae short. Eyes fairly large, placed barely in front of the middle of the sides. Three distinct ocelli. Head oval-rectangular, the posterior margin rounded at the

corners, straight in the middle. The scapes extend beyond the occiput by almost half their length. Second joint of the flagellum half as long as the 1st, one and a half times longer than wide. Thorax bi-emarginate. The mesonotum is constricted in the middle as in *Acantholepis*, forming in profile, a saddle-shaped depression. Its anterior portion forms with the pronotum the usual convexity. Its posterior portion, seen from the side, is cuneiform, almost acute and almost sub-bidentate at the summit, descending in a slope towards the deep meta-epinotal suture. The epinotum forms a rounded and high boss, the dorsum convex and ascendant, the declivity almost flat. Scale low, subrectangular, inclined forwards. Epinotum and clypeus subopaque, finely but distinctly rugose transversely. The rest of the body shining and almost smooth, except the abdomen which is feebly shagreened. A few erect, coarse and yellowish hairs on the head and abdomen. The rest without erect pilosity, but clothed with a very fine and sparse pubescence. More or less dark castaneous brown, tarsi and articulations yellowish. Antennae yellowish brown. Legs brownish.

♀. 4.7 mm. Head wider than long, the hind margin widely emarginate. The scapes extend by two-fifths of their length beyond the occiput. Declivity of the epinotum much longer than the dorsum. Shape of the thorax ordinary, not recalling in any way that of the ♂. A few erect hairs on the thorax; pubescence fairly dense, much more so than in the ♂. Otherwise like the latter. Deälated.

“Mountains of Natal. (R. C. Wroughton).”

Some specimens in the S. A. Museum have been determined for me by Dr. Santschi as being this species. They do not agree, however, entirely with the above description. The clypeus is as smooth and shining as the rest of the head, not subopaque and rugose; the colour of the body, femora and tibiae is dark brown, almost blackish brown.

The shape of the thorax in this species and the other species of the sub-genus recalls that of *Acantholepis*, but differs in not having a very noticeable suture between the meso- and metanotum. The latter also has less prominent stigmatic tubercles than in *Acantholepis*. In these specimens the ocelli are very small, visible only under a high magnification. The meso-metanotum is as long as the pronotum. The latter is half as wide again as long, very convex transversely, fairly so longitudinally. The scale of the petiole is two-thirds longer than it is wide above.

King Williams Town, (Rev. R. Godfrey). (S.A.M., G.A. colls.)

P. (sub-gen. ANACANTHOLEPIS) VAN DEN KELLENI, Forel.

Mitt. Schweiz. Ent. Ges. vol. 10, p. 310. ♂. 1901.

“♂. Head somewhat flattened, rectangular, a little longer than wide, shallowly emarginate behind. Eyes decidedly large, placed a little in front of the middle of the sides. The scapes extend very little beyond the hind margin of the head. Thorax fairly slender, strongly contracted at the mesonotum, especially so along the whole length of the meso- and metanotum, or quite as much so as in the *capensis* group of *Acantholepis*. Mesonotum longer than wide. Metanotum quite half as long as the mesonotum, with two slightly raised stigmata, separated from both the meso- and the epinotum by deep and somewhat constricting sutures. Dorsum of epinotum very wide, rectangular, at least twice as wide as long, separated from the declivity by a fairly sharp margin which ends on each side in a sharp corner. The declivity is also sharply margined at the sides. Scale thick, rounded above, strongly inclined forwards. Head and thorax dull, exceedingly finely and closely punctured, or reticulate-punctate. Abdomen and scale shining, very superficially reticulate.”
Mossamedes.

Var. TRICOLOR, Forel.

Schultze, Reise Süd-Afrika, vol. 4, p. 24, ♂. 1910.

“♂. 1.6 mm. Differs from the type [species as follows: Head much wider, quite as wide as long, or even wider. Scape somewhat longer, extending very distinctly beyond the occipital margin. Head and thorax not quite dull, the sculpture more superficial. The thoracic emarginations between the meso- [and metanotum and between the latter and the epinotum more pronounced than in the type species. Pilosity the same, the blunt bristly hairs somewhat more distinct. Head, thorax, petiole and legs yellow-red; 1st abdominal segment above yellow; the rest of the abdomen black, with yellow margins to the segments. Club of antenna brownish.

Kalahari, between Kooa and Sekgoma, (L. Schultze)”.

Race POLITA, Santschi.

Göteborgs Kungl. Vetens. och Vitterh. Händl. XV, 2, p. 37, ♂. 1914.

“♂. 1.5–1.6 mm. Thorax and mandibles testaceous red. Head and abdomen black, sometimes reddish brown. Antennae and legs yellow, middle of the femora and part of the flagellum more or less

brownish. Shining. Smooth, very sparsely and finely punctured. Pilosity as in the type species. Head distinctly longer than wide, narrower in front, the sides very arcuate and the posterior margin fairly convex, the posterior angles considerably rounded. Eyes occupying one-fourth of the sides and placed in the middle. The scape extends beyond the occipital margin by more than a quarter of its length. First joint of flagellum longer than the three following joints; 2nd and 3rd joints nearly one-half shorter than the 4th, which is one and a half times longer than wide. Clypeus fairly strongly carinate, convex. Anterior face of the mesonotum longer and less abrupt than the posterior face. The dorsum and declivity of the epinotum together, form a convexity without precise limits. The front of the dorsum descends in an abrupt slope. Scale rounded at the summit. Much more shining than the var. *tricolor* or the type, the head more darkly coloured. Stamford Hill, Natal, (Traegaordh)".

P. (sub-gen. ANACANTHOLEPIS) JOUBERTI, Forel.

Schultze, Reise Süd-Afrika, vol. 4, p. 23, ♂. 1910.

"♂. 1.7-4 mm. — ♀. minor, 1.7-2 mm. Mandibles narrow, smooth, sparsely punctured, 5-dentate. Clypeus obtusely carinate, strongly arcuately produced in front. Head elongate, quite one-quarter longer than wide, rounded and rectangular, the sides very convex, behind barely concave and but little wider than in front. Eyes fairly large, placed at about the middle of the sides. The scape extends beyond the occipital margin by just one-fourth of its length. Second joint of the flagellum as wide as long, the succeeding joints very little longer than wide, (in *Deweti* Forel nearly twice as long as wide). Thorax almost precisely like that of *Deweti*, with the same swelling and two constrictions, but the mesonotum is less strongly constricted in the middle* and the dorsum of the epinotum is more convex, rising less posteriorly; the declivity is also steep. Scale strongly inclined forwards. Legs much shorter than in *Deweti*. Ocelli indistinct. Quite smooth and shining, with a very sparse and feeble puncturation. The epinotum has some very fine transverse rugae behind. Exserted pilosity on the body very scanty, absent from the limbs. A sparse, very fine but distinctly brighter pubescence all over.

Black; antennae and legs brown; scapes, mandibles and articulations dull reddish.

♂ major (repletes or honey-storage vessels) 3-4 mm. long, of which

* i. e. the meso-metanotal suture is less deep.

1.5-2.5 is taken up by the abdomen, which is greatly distended. Head trapezoidal, much narrowed in front, concave behind. Second and 3rd joints of the flagellum very slightly longer than wide. Scape as in the normal ♀. Mesonotum not at all constricted in the middle, but of the ordinary shape, forming with the pronotum a very wide convexity, in which the metanotum and the two stigmata merely continue the curve of the mesonotum down to the meta-epinotal suture. The latter and the epinotum and all else exactly as in the ♀ minor. Pro-mesonotal suture very distinct, as in the ♀ minor (hardly feebler). Ocelli indistinct.

“Kammagas, Little Namaland. (Schultze).”

I have preferred to copy the author's original description, as the only specimen (cotype) which I possess is somewhat damaged. From *Deweti* it may be distinguished by its smaller size, narrower pronotum which is as long as wide, and by the short meso-metanotum, which is barely widened posteriorly, (distinctly widened in *Deweti*).

SUB-GENUS ZEALLEYELLA, Arnold.

For characters see table of sub-genera.

P. (sub-gen. ZEALLEYELLA) CUSTODIENS, Smith.
(Plate VIII, figs 123, 123 a).

Cat. Hymen. B.M. VI, p. 33, ♀. 1858.

Roger, (*Camponotus hendecarthrus*) Berlin. Ent. Zeitschr. vol. 7,
p. 123, ♀. 1863.

Mayr, Ann. K.K.N.H. Mus. Wien, vol. 10, p. 148. ♂. 1895.

♀ maxima, 9.2 mm. Head, thorax, legs and antennae dark burnt sienna or brownish brick-red, the masticatory margins of the mandibles black, abdomen dark brown. Densely clothed all over with a pale yellow and silky or slightly golden pubescence. The pubescence on the flagellum somewhat oblique, elsewhere decumbent. On the abdomen the pubescence is long, slightly masking the integument, and is so arranged as to present a pattern of alternating dark and bright longitudinal stripes. This is due to the light being reflected in different directions, since the hairs on the median third or more of each segment are directed inwards, those on the outer third or less directed outwards, and at the extreme sides again directed inwards. Mandibles nitidulous, longitudinally striate and coarsely punctured. The rest of the body, including the legs and antennae,

dull, very closely and finely punctato-rugulose and reticulate-rugulose, or shagreened; the abdomen very closely rugulose. A few erect, yellowish and coarse hairs on the clypeus, thorax, edge of petiole and apical margins of the abdominal segments, and on the outer margins of the femora; the tibiae and metatarsi moderately spinose beneath. Head, excluding the mandibles, subquadrate, moderately narrowed in front, the sides feebly convex, the posterior margin shallowly emarginate. Mandibles large, armed with an acute and large apical tooth and 6 more obtuse teeth behind. Clypeus large, convex transversely, the anterior margin convex. Frontal area fairly distinct, triangular. Frontal carinae short, parallel. The scapes extend beyond the hind margin by about one-third of their length; all the joints of the flagellum longer than wide, the 1st to 4th at least three times longer than wide. A shallow frontal groove present, ending behind in a small pit which represents the vestige of the anterior ocellus. The lateral ocelli are also atrophied. Pronotum very convex transversely, the anterior half declivous in front, two-thirds wider than long. Pro-mesonotal and meso-epinotal sutures well defined. Mesonotum convex transversely, slightly so longitudinally, subrotund, very little more than half the width of the pronotum, not distinctly separated from the short metanotum. The latter, widened posteriorly, is barely one-quarter as long in the middle as the mesonotum. Dorsum of epinotum twice as wide as long, near the base impressed transversely in the middle; the stigmatic orifices at the apical angles of the dorsum are prominent or sub-tubercular; the declivity subvertical and longer than the dorsum. Anterior face of the scale of the petiole convex in all directions, the posterior face flat, the dorsal edge a little emarginate in the middle, higher than wide. Abdomen massive, subovate, highest in front.

♂ *media*, 5.3–7 mm. These differ but little from the largest ♂♂. The head is longer, as much as one-fifth longer than wide. The scape extends by half or nearly half its length beyond the occipital margin; the transverse depression between the mesonotum and metanotum is shallower and the transverse impression near the base of the dorsum of the epinotum is longer. The abdomen is also narrower or longer in proportion to the thorax than in the ♂ *maxima*. Colour as in the ♂ *maxim*, but the legs and flagellum more brownish.

♂ *minima*. 3.5–5 mm. Differing from the ♂ *maxima* in the same way as the ♂ *media*, but with these additional distinctions.

Head oblong-ovate, narrowed in front, at least one-fifth longer than wide, the sides less convex than in the larger ♂♂. All the joints of the flagellum relatively a little shorter. Mesonotum nearly

one-third longer than wide, the metanotum almost obsolete, with no transverse impression between the stigmata and the posterior margin of the mesonotum. The dorsum of the epinotum is less convex and the scale of the petiole is much thicker above. The colour is darker, of a dull reddish brown; the alternating arrangement of the pubescence on the abdomen is barely appreciable.

♀. 13-13.2 mm. Colour, sculpture, pilosity and pubescence similar to that of the ♂ maxima, but the head and thorax a shade darker, the abdomen almost black. The pubescence of the abdomen is shorter and the pattern less apparent than in the ♂ maxima. The pubescence on the epinotum is silvery, not golden. Head a little wider than long, subrectangular, the posterior margin straight, slightly narrowed in front. Mandibles armed with 9 or 10 acute teeth, dull, closely striato-punctate. Anterior margin of the clypeus subangular in the middle. Frontal carinae longer than in the ♂ maxima, divergent posteriorly, extending back as far as the level of the middle of the eyes. Frontal sulcus fairly deep, ending at the anterior ocellus. Ocelli not very large. Scape of antenna extending beyond the hind margin by about two fifths of its length. Pronotum slightly exposed above in the middle. Thorax massive, wider than the head. Mesonotum, seen from above, semicircular in outline in front, its anterior half fairly convex transversely, the posterior half flat above; more than one-third wider than long. Scutellum moderately convex transversely, wider than long, half as long as the mesonotum. Metanotum well defined. The dorsum and declivity of the epinotum form a single and steep plane. Scale as in the ♂ maxima, but thinner above. Anterior face of the abdomen vertical, its brow rounded. Abdomen very large, quite two-thirds wider than the thorax, subovate, the apex broad, all the segments much wider than long. Wings strongly tinged with ochreous-yellow, the nervures and stigma brown.

♂. 10.1 mm. Brownish black, the base and extreme apices of all the femora and tibiae, and the metatarsi brownish-ochreous, the rest of the tarsi and the antennae more or less reddish brown. Pubescence similar to that of the ♀, but a little finer and shorter, of a greyish silvery colour except on the mesonotum where it is pale golden. The alternating arrangement of the pubescence on the abdomen less distinct than in the ♀. Head subquadrate, as long as wide behind the eyes, parallel-sided and narrower in front of the eyes than behind them, where the sides are convex. Posterior margin feebly concave, almost straight. Eyes convex and projecting beyond

the sides. Ocelli not large. The scapes extend beyond the occipital margin by three-fifths of their length, they are slightly arcuated at their apical third and feebly incrassate from that point to the apex. Flagellum 11-jointed, all the joints longer than wide. Mandibles elongate triangular, closely striated and punctate, slightly shining, armed with 8 or 9 teeth, the apical tooth long and acute. Thorax similar to that of the ♀, but proportionately narrower, the mesonotum not wider than long. The metanotum is more prominent, subangular in the middle. Abdomen elongate-ovate, about two-thirds longer than wide. Genital armature exserted, the sagittae brownish yellow. Legs long and slender. Wings as in the ♀.

This is probably the commonest and most plentiful species of the Camponotine ants in South Africa, and is widely distributed over the whole region. It nests in the ground, forming very populous communities. The nest entrances are rarely surrounded by excavated material, the excavated earth being usually spread out in a very thin layer for a good distance all round the entrances; crateriform mounds are never formed. It is an exceedingly pugnacious species, preying chiefly on other insects, but its beneficent labour in this direction is probably more than counterbalanced by the harm it does in the dispersion and cultivation of scale-insects and Aphides. It is therefore to be regarded as a pest, especially in rose-gardens and citrus orchards. It may be kept in check to some extent by pouring a weak solution of potassium cyanide down the nests. From the narrower point of view of the myrmecologist, it may also be considered a nuisance, since it is such a dominant and pugnacious species that in many localities it occupies large areas of ground to the exclusion of other and more interesting kinds of ants.

(S.A.M., R.M., G.A. colls.).

Race FALLAX, Mayr.

(as species) Reise der Novara, Zool., p. 54, ♂. 1865.

Jahrb. Hamburg Wissen. Anst., vol. 10, p. 5, 1893.

Emery, Ann. Soc. Ent. France, vol. 63, p. 43, 1895.

Mayr, in the second reference cited, reduces this form from specific rank, remarking that "it cannot be maintained as a species distinct from *custodiens* on account of the exserted pilosity, . . . it is however, possible that in *fallax* the distinctly weaker constriction of the thorax between the meso- and epinotum and the less inclined dorsum of the latter, (similar to the usual condition in small ♂♂ of *custodiens*)

may prove to be a constant character when more abundant material is examined".

According to Emery, "the ♂ of *custodiens* attains a larger size, and in the maxima and media the middle joints of the flagellum are clearly more than twice as long as wide. In *fallax*, they are barely more than twice as long as wide, even in the largest ♂♂; in the smallest, the 3rd joint of the flagellum is barely half as long again as wide, whereas in the smallest *custodiens* they are almost twice as long as wide".

I have some examples of the ♂ minima of this race before me, so determined by Dr. Forel. Apart from the colour, which is a pale straw-yellow, a more abundant and more exerted pilosity here and there, it does not appear to me to be more than a very slight variety. The 5th and 6th joints of the flagellum are twice as long as wide, and the 4th joint a little more than twice.

Stormvlei, Swellendam Cape Prov.; Capetown, (Simon); Grahams-town, (Hewitt); Matroosberg, Hex River Mountains, (R. E. W. Tucker). The examples from Grahamstown and Matroosberg are of the same colour as *custodiens*. (S.A.M., R.M., G.A. colls.).

P. (sub-gen. ZEALLEYELLA) STEINGROEVERI, Forel.

(Plate VIII, fig. 124).

Mitt. Schweiz. Ent. Ges., vol. 9, p. 78, ♂. 1894.

♂. 2·7-7 mm. — ♂ maxima. Not unlike a smaller, darker and more compact *custodiens*, but without any silky pubescence or pattern on the abdomen. Dark rusty-reddish brown, the tarsi and antennae ferruginous, the thorax darker than the head; abdomen dark brown, the apical margins of the segments pale flavous, (in Forel's original description the colour is stated to be yellow-red, the abdomen brown; this probably refers to a callow specimen). Pubescence short, decumbent, yellowish and not dense, almost absent from the head, more abundant on the abdomen, but not sufficiently so as to mask the colour or sculpture. The pubescence on the tibiae, tarsi and antennae is oblique, very scanty on the femora. Abdomen with an abundant, short, yellow and exerted pilosity. Thorax superficially rugulose, the sculpture strongest on the dorsum of the epinotum; abdomen smooth, microscopically aciculate. Pronotum more shining than the rest of the thorax. Head very densely punctate-rugulose and also somewhat reticulate, a small median longitudinal area on the clypeus shining, with the sculpture more or less effaced. Mandibles with 7 teeth, the apical tooth long and acute; smooth and shining over

the basal half, strongly punctured, the apical half strongly striate. Clypeus more convex than in *custodiens*, its anterior margin arcuate. Frontal carinae and frontal area as in *custodiens*. The head is sub-ovate or subcircular, narrowed slightly in front, the sides much more convex than in *custodiens*, the posterior margin straight. The scape extends beyond the hind margin by one-sixth of its length. Pronotum shorter than in *custodiens*, quite twice as wide as long; the mesonotum a little wider than long; the metanotum very short, less distinct than in *custodiens* and separated from the epinotum by a much deeper suture. Epinotum more convex transversely than in *custodiens*. The scale of the petiole a little thinner than in that species, and barely or not at all emarginate in the middle of the upper edge. Abdomen subcircular, a little longer than wide.

♀ *media*, 4.8–5.8 mm. A little darker on the head and thorax, the former a little longer and less convex-sided. Otherwise like the ♀ *maxima*.

♀ *minor*. 3–3.8 mm. Dark brown or blackish brown, only the mandibles, antennae, tibiae and tarsi paler or ferruginous. Fairly shining all over, especially the cheeks and abdomen. The sculpture is much more superficial than in the larger ♂♂. The scapes are longer, extending beyond the hind margin by one-third of their length. The meta-epinotal suture is shallower, and the scale is much thicker above than in the larger ♂♂. The head is much less convex at the sides and is also longer than in the larger ♂♂.

♀ 11.8 mm. (hitherto undescribed). Very dark reddish brown, the abdomen blackish brown, the mandibles, antennae and legs more or less ferruginous. A more slender insect than the ♀ *custodiens* and not dissimilar, but easily distinguished by the following characters.

The sculpture is much stronger. The head is closely punctato-rugulose, between the frontal carinae mainly punctate. The clypeus is strongly and closely punctured, its anterior margin arcuate, not subangular in the middle. The frontal sulcus is much deeper than in *custodiens*. The mesonotum is closely punctured with fairly deep and small punctures; it is narrower than in *custodiens*, being only one-fifth wider than long. The scutellum is longer, or more than half the length of the mesonotum. The chief distinction between the two species lies in the form of the scale, which in this species is deeply and almost angularly excised above in the middle, whereas in *custodiens* the emargination is wide and shallow. The abdomen is longer, or one and a half times longer than wide. Wings hyaline, except the subcostal cell which is ochreous; all the nervures ochreous except the subcostal which is blackish brown.

♂. 6·7 mm. (hitherto undescribed). Black, the 1st abdominal segment sometimes paler or brownish black, the antennae and legs, excepting the ferruginous bases and apices of the femora and tibiae, brown, the tarsi brownish ochreous. Slightly shining all over, a narrow semicircular area in front of the ocelli very shining. Very finely and rather superficially punctate-rugulose, the mesonotum and scutellum very finely and evenly punctured, the abdomen exceedingly delicately rugulose. Very much like the ♂ of *custodiens*, but easily distinguished by its smaller size, darker colour and moderately shining integument. It also differs from it in the following features. The 1st joint of the flagellum is clearly shorter than the 2nd. (as long in *custodiens*). The eyes are much more prominent, hemispherical. The scale of the petiole is thinner, more deeply emarginate in the middle, the anterior face flat or slightly concave transversely, not convex. The genital armature is relatively much larger and quite differently formed. The stipes at the base is ochreous and very convex and large, narrowing rapidly to the long apical portion. The sagittae are elongate and subacute at the apex, not lamelliform, widely rounded at the apex and as wide there as at the base as in *custodiens*. The wings as in the ♀.

Willowmore, Mafeking, Orange River; Choaherib, S.W.A. (R. E. W. Tucker). The specimens from Choaherib have the cheeks more strongly punctured in the smaller ♂♂, and the ♀ is a trifle larger. (S.A.M., R.M., G.A. colls.; type of ♀ and ♂ in my collection.

P. (sub-gen. ZEALLEYELLA) BRAUNSI, Forel.

Ann. Soc. Ent. Belg. vol. 57, p. 141, ♂, 1913.

♀. 3·4–5·1 mm.

♀ maxima. 5·1 mm. Head, thorax and petiole reddish brown (a brownish burnt sienna), the mandibles and clypeus more reddish than the rest, abdomen dark brown, femora brown, tibiae, tarsi and antennae rusty reddish brown. Pubescence very scanty and short, longer on the legs and scapes and somewhat oblique. Pilosity short, yellowish, more abundant on the occiput and abdomen than elsewhere. Head slightly shining, finely and closely reticulate-rugulose; the rest of the body shining, very superficially rugulose on the sides of the pro-mesonotum, dorsum of epinotum and the scale of the petiole. Head barely longer than wide, narrowed a little in front, or including the closed mandibles, triangular with the basal corners rounded. The sides are much less convex than in *Steingroeveri*. Posterior margin feebly convex. Mandibles nitidulous, striato-punct-

ate, armed with 7 teeth, the apical tooth acute. Anterior margin of clypeus convex. Eyes placed at the posterior third of the sides. The scapes extend beyond the posterior margin by two-fifths of their length. Thorax like that of *Steingroeveri*, but differing in the presence of a fairly distinct suture between the meso- and the metanotum, and by the deeper meta-epinotal suture. The metanotum is also decidedly longer, being one-quarter as long in the middle as the mesonotum. The dorsum of the epinotum is one and a half times wider than long, the oblique declivity one-third longer than the dorsum. Scale of petiole wider above than below, as thick above as below, the summit entire and convex transversely.

♀ *media*. 4 mm. Colour of the head and thorax darker than in the ♀ *maxima*, more brown than red. Sculpture feebler, the surface more shining, especially the head. The latter and the scapes are a trifle longer. The thorax is relatively narrow, the mesonotum longer than wide, (as long as wide in the ♀ *maxima*) and the metanotum also longer or nearly one-third as long as the mesonotum. The metanotal stigmata are more prominent, subangular when seen in profile. The declivity of the epinotum is hardly longer than the dorsum. The scale is a little thicker and narrower above. Otherwise like the ♀ *maxima*.

♂ *minor* 3.1 mm. Like the ♀ *media*, but the whole colour blackish brown, except the tarsi and mandibles which are ferruginous.

Willowmore, Cape Prov. (Dr. B. Brauns). (R.M., G.A. colls.)

SUB-GENUS ANOPOLEPIS, Santschi.

For characters see table of subgenera.

PLAGIOLEPIS RUFESCENS, Santschi.

Ann. Soc. Ent. France, vol. 85, p. 289. ♂. 1916.

“♂, 3.3–6 mm. Possibly it attains to a larger size.

♂ *major*. Pale chestnut brown, cheeks yellowish. Limbs slightly paler than the body. Erect pilosity yellowish, fairly dense on the head and thorax (a little more abundant than in *Steingroeveri*), scantier on the femora, absent from the scapes. Pubescence sparse, hiding the sculpture very little. Fairly shining, particularly the abdomen, the head less shining. Front of the head and sides of the thorax very finely striolate, passing elsewhere into a reticulation with smooth spaces, especially on the abdomen. A fine piliferous puncturation all over. Head quadrate, the sides moderately convex,

the posterior angles slightly rounded and the posterior margin straight. Frontal area wide and triangular. Clypeus very convex, subcarinate. The scape extends beyond the hind margin by quite one-third of its length (shorter in *Steingröveri*). Mandibles closely and evenly striate, armed with 6 or 7 strong black teeth, the apical tooth twice as long as the others. Thorax like that of *Steingröveri*, but the promesonotum is a little more convex, the dorsum of the epinotum shorter, with the stigmatic orifices more prominent at the posterior angles. Scale rounded, or barely emarginate at the summit, erect, as high as in *Steingröveri*. Abdomen dilated.

♀ minor. More shining than the ♀ major; the sculpture more effaced; head a little longer than wide; the scape extends beyond the hind margin by half its length. Promesonotum less convex than in the ♀ major. The stigmata on the epinotum even more prominent at the posterior angles, the latter more accentuated. Scale thick, not emarginate above, abdomen smaller, otherwise like the ♀ major. It also differs from *Steingröveri* in colour, with which it is closely allied".

Cape Town, (Dr. Reichensperger).

PLAGIOLEPIS NUPTIALIS, Santschi.

Loc. cit., p. 289, ♂.

♂. 10-11.5 mm. Thorax, scale and antennae pale yellowish brown, the legs brownish ochreous, head blackish, mandibles ochreous with black teeth, the abdomen in greater part dirty brownish yellow, with indistinct darker or brownish bands dilated in the middle on the apical margins, the base of the 1st segment brown. The pubescence on the head and thorax less plentiful than in *custodiens*, the pubescence on the abdomen directed straight backwards, not undulate as in *custodiens*. This species bears a very great resemblance to *custodiens*, but differs from it as follows.

The head is longer, or a trifle longer than wide behind the eyes, the width behind the eyes is only one-fourth greater than the width of the anterior margin, (a little more than one-third in *custodiens*). The mandibles are shining, only aciculate and not sharply striate as in the other species, and with much blunter teeth. The eyes are a little smaller but more prominent. The scapes are nearly straight, not curved at the distal third as in *custodiens*. The thorax is lower, the dorsum of the mesonotum and scutellum not raised much above the base of the epinotum. The mesonotum is a little

narrower and much less gibbous in front. The scutellum, excluding its sloping sides, more pointed behind. The metanotum less prominent in the middle. The scale of the petiole is much thinner and much more shallowly emarginate above. The abdomen is wider and less convex from side to side. Genital armature brownish yellow, the apical half of the stipes narrower than in *custodiens* and less obtuse at the apex. Otherwise like the ♂ of *custodiens*. Willowmore. Cape Prov., (Dr. H. Brauns). Taken emerging from the nests of *P. custodiens*, and almost certainly living parasitically with that species. (S.A.M., R.M., G.A. colls).

P. (sub-gen. ANOPOLEPIS) TRIMENI, Forel.

Ann. Soc. Ent. Belg. vol. 39, p. 429, ♀ (replete) 1895.

Deutsch. Ent. Zeitschr. Beiheft, p. 223, ♀. 1913.

♀. 2.5-3.2 mm. Pale ochreous (straw-yellow) with the flagellum gradually infusate towards the apex, the scale of the petiole, apex of the abdomen, and a patch on each side of all the abdominal segments brownish; or yellowish brown, with only the scapes, tarsi and basal two-thirds of the 1st and 2nd, and basal half of the 3rd abdominal segments ochreous. The colour varies between these extremes. Clypeus slightly shining, the rest of the body including the legs and antennae dull, and clothed with a fine, whitish yellow and adjacent pubescence. A few erect yellowish hairs on the clypeus, apex of abdomen and margins of the abdominal segments.

Microscopically reticulate-rugulose all over. Head quadrate, the corners narrowly rounded, the posterior margin feebly convex, hardly narrower in front than behind. In the smaller ♀♀, especially in the more darkly coloured forms, the head is slightly longer than wide (one-tenth). Eyes large, occupying nearly one-third of the sides and placed a little behind the middle. Three very minute ocelli present. Mandibles shining, sparsely striate and punctured, the punctures large, 5-dentate. Clypeus sparsely and finely punctured, the anterior margin almost straight. Frontal area triangular, wider than long. The scapes barely extend beyond the occipital margin; 2nd joint of the flagellum hardly more than half the length of the 1st joint. Pro-mesonotal suture well defined. Meso-epinotal suture not deep. There is no distinct metanotum, the anterior margin of which is barely indicated by a shallow impression just in front of the stigmata. Mesonotum wider than long, not very convex transversely, almost straight longitudinally, and barely depressed behind. Dorsum of epinotum short, straight in profile, not higher

than the mesonotum, sloping very gradually into the longer and very oblique declivity. Scale of petiole inclined forwards, seen from the side cuneiform, the dorsal edge very thin or almost trenchant, feebly emarginate in the middle. Abdomen about one-quarter longer than wide, the sides moderately convex.

♀ replete, 4.6–6 mm. Head and thorax 2 mm. long, the rest made up of the abdomen in various degrees of distention. This form differs from the ordinary ♀ as follows: The head is a little wider, sometimes a little wider than long, quadrate, the sides straighter and almost parallel. The ocelli are larger and plainly visible. The thorax is relatively wider and less convex transversely, especially the pronotum. The dorsum of the epinotum is much wider, at least three and a half times wider than long in the middle. The abdomen when fully distended has the chitinous plates separated by the complete exposure of the intersegmental membranes. Otherwise like the normal ♀.

The structural differences pertaining to this form seem to indicate that as early as the larval stage certain individuals are set apart to serve as honey-reservoirs, and that the replete is not merely an ordinary ♀ selected by chance to fulfil that function.

♀ 5.6 mm. (hitherto undescribed). Mandibles, except the brown masticatory margin, antennae, tibiae, tarsi and apices of the femora ochreous, the last two joints of the flagellum infusate. Head and thorax pale brown (raw umber), the scutellum and metanotum ochreous brown, abdomen and petiole dark brown. Pubescence exceedingly short and dense, decumbent, pale yellowish, slightly golden in the middle of the abdominal segments, present all over including the legs and antennae. A few long yellowish pilose hairs on the clypeus, and some short and blunt ones on the apical margins of the abdominal segments. Mandibles and clypeus moderately shining, the rest dull. Sculpture as in the ♀. Head subquadrate, a little wider than long, the posterior angles rounded, the posterior margin straight. The eyes occupy nearly one-third of the sides, placed a little behind the middle. The scape reaches the occipital margin. Pronotum narrowly exposed above. Mesonotum fairly flat behind, one-third wider than long, the parapsidal sutures deep. Scutellum flat, convex only at its margins, much wider than long. Metanotum rounded and fairly prominent. Dorsum and declivity of epinotum confluent, forming a single oblique plane. Petiole as in the ♀. Abdomen elongate parallel-sided, twice as long as wide. Deilated, otherwise like the ♀.

It is to be noted that the emargination of the scale of the petiole is almost or quite obsolete in the smaller ♀♀, in which case the

insect approximates very closely to Emery's description of *decolor*, differing from that species only in the presence of erect hairs on the clypeus and abdomen.

S. Rhodesia, not rare; Natal.

A very agile insect, with very erratic movements. The nest is usually formed in sandy soil. The galleries containing the repletes are rarely less than a foot below the surface of the ground.

(S.A.M., R.M., G.A. colls.; type of ♀ in my collection).

Var. KARROOENSIS, n. v.

These differ from the type of the species in the longer head, almost one-quarter longer than wide in the smallest ♂♂, and in the longer scape which extends beyond the occipital margin by a little less than one-fourth of its length. The thorax is somewhat narrower and more convex transversely, the mesonotum being nearly as long as wide. The head is slightly shining all over. The repletes differ from those of the type species only in the shining head, with rather stronger sculpture; the abdomen is also slightly shining.

♀. These differ from the type species in the same way as the repletes. The colour is a little paler on the head, and the ocelli are larger. The joints of the flagellum are all relatively longer. Wings hyaline, faintly tinged with yellow, nervures ochreous.

Willowmore, Cape Prov. (Dr. H. Brauns).

(S.A.M., R.M., G.A. colls.; types in my collection).

P. (sub-gen. ANOPOLEPIS) DECEPTOR, n. sp.

♂. 2.7-3.2 mm. Reddish ochreous, the flagellum somewhat fuscous, the middle and hind pair of legs pale yellowish brown, the scale of the petiole brownish ochreous, abdomen black, except the 1st and 2nd segments which are dirty yellow, the 2nd having also its apical margin black. Pubescence adjacent, very short, yellowish and inconspicuous, almost wanting on the head, thorax, legs and antennae. A very few yellowish, erect pilose hairs on the clypeus and apical margins of the abdominal segments. Head, thorax and petiole dull, very closely, finely and evenly reticulate-punctate or granulate. Abdomen rugulose and dull, except the last three segments which are smooth and shining.

Head subquadrate, about one-sixth longer than wide, the sides very feebly convex, not wider behind than in front, the posterior margin straight. Eyes large, placed a little behind the middle of the sides. Ocelli distinct. Mandibles slightly shining, striate, armed with 5 acute

teeth. Anterior margin of clypeus feebly convex. The scapes extend beyond the hind margin of the head by a little more than one-fifth of their length. Pronotum convex transversely, very little wider than long. Pro-mesonotal suture not strong, meso-metanotal suture obsolete, the metanotal region being indicated only by the stigmatic orifices. Mesonotum convex transversely, parallel-sided, as long as wide. Meta-epinotal suture narrow and not deep. Dorsum of epinotum widening very little posteriorly, nearly as long as wide, fairly convex above. The declivity is subvertical in its upper two-thirds, its lower third forming a subhorizontal shelf. The brow of the declivity rounded. Scale of petiole inclined very little forwards, wider above than below, the dorsal edge feebly convex transversely, thick and rounded from front to back. Abdomen elongate, two-thirds longer than wide. Legs fairly long and slender.

Sawmills, Umgusa River, S. Rhodesia.

To the naked eye, this species bears a deceptive resemblance in colour and movements to *Monomorium bicolor*, race *nitidiventris*. Like that species it is exceedingly agile and forms a nest in loose sand, surrounded by a low and more or less circular crater. It is tolerably distinct from *Trimeni* and its var. *karrooensis* in form and sculpture. Judging by the description alone, it resembles *decolor* Emery in sculpture, but is larger, of a different colour, and has a different scale and longer scapes.

(S.A.M., R.M., G.A. colls.; type in my collection).

P. (sub-gen. ANOPOLEPIS) MACGREGORI, n. sp.

♂. 3 mm. Dark brown or blackish brown, the scape, basal half of the flagellum, and the tarsi ochreous, tibiae ochreous brown, mandibles ferruginous. The sculpture consists of a microscopic punctate rugulosity, but nevertheless stronger than in *Trimeni*; dull all over. Pubescence whitish on the head and thorax, greyish on the abdomen, similar to that of *Trimeni*, but much less apparent on the head and thorax. A few yellowish pilose hairs on the clypeus and apical margins of the abdominal segments. Thorax narrower and more convex transversely than in *Trimeni*. The mesonotum is distinctly longer than wide, and the dorsum of the epinotum longer than in *Trimeni*, or as long as the declivity. The scale of the petiole is thicker, not emarginate as in *Trimeni*. Otherwise like that species. Glenville, Bulawayo. Crawling on the trunk of a tree. I specimen.

Type in my collection.

P. (sub-gen. *ANOPOLEPIS*) *MELANARIA*, n. sp.

♂. 2·8–3·1 mm. Black, all the tarsi, the anterior tibiae and the scapes more or less ochreous, the flagellum dirty brownish yellow, the mandibles bright reddish ochreous. Moderately shining, and almost smooth and without sculpture, at the most only very superficially and microscopically rugulose. Clothed with a very short, adjacent and brownish yellow pubescence. A few short brownish pilose hairs on the abdomen and clypeus. Very similar to *P. Macgregori* from which it differs in the colour, absence of sculpture, the shining integument, and also in the following characters.

The head is a little longer than wide, (one-sixth); the eyes are more convex and much larger, occupying nearly one-third of the sides of the head, (one-fourth in *Macgregori*); the scapes are longer, extending beyond the hind margin by one-fourth of their length, (one-tenth in *Macgregori*); the scale of the petiole is very thin above, almost trenchant, and the dorsum of the epinotum is more convex lengthwise.

♀ replete. 4·5 mm. (the abdomen 2·5 mm. long). Mesonotum a trifle wider than long, or as wide as long; the dorsum of the epinotum shorter than the declivity. Scale of petiole wide above and feebly emarginate in the middle. Otherwise like the normal ♀.

Sawmills, Umgusa River. S. Rhodesia. The nest is made in loose sandy soil, usually near the roots of a shrub or of grass. It is surrounded by an irregular crater and has an unusually wide and more or less elliptical entrance.

(S.A.M., R.M., G.A. colls.; types in my collection).

P. (sub-gen. *ANOPOLEPIS*) *DECOLOR*, Emery.

Ann. Soc. Ent. France, Vol. 63, p. 44, ♀. 1895.

“♂. 1·7–2·5 mm. Flavo-testaceous, the head darker, the apex of the abdomen fuscous, dull, the cheeks, lower surface of the head and the coxae shining, pubescent, without erect pilose hairs on the clypeus and abdomen, head subquadrate, the angles rounded, the scapes extend barely beyond the occipital margin, thorax robust, distinctly impressed at the meso-epinotal suture, epinotum convex, the scale small, inclined forwards, acutely cuneiform.”

Hamman's Kraal; Kimberley.

“A little less squat than *P. pygmaea*, which this species resembles in the slightly depressed shape of the head and in the small scale, inclined forwards and cuneiform in profile. The thorax is formed in

much the same way as is *P. custodiens* and *fallax*; the pro-mesonotal suture is not strongly defined, the mesonotum is not impressed, and is longer than the epinotum; the profile of the dorsum of the thorax forms a very obtuse angle (the apex downwards) at the point of the meso-epinotal suture. All the upper part of the body is dull, even under a strong magnification; this is due to a close reticulate puncturation, reinforced by a microscopic fundamental sculpture. On the abdomen the punctures merge together into transverse rugulose lines."

SUB-GENUS *PLAGIOLEPIS*, Mayr, s. str.

For characters see table of sub-genera.

P. PYGMAEA, Latreille.

Ess. Hist. Fourmis France, p. 45. ♂, ♀. 1798.

Schenck, (as *Tapinoma*) Jahrb. Ver. Naturk. Nassau.

Vol. 8, p. 68 and 130 ♂, 1852.

♀. 1.3-2 mm. Dark brown, the scapes, tibiae and tarsi pale ochreous, the femora yellowish brown, mandibles ferruginous, flagellum fuscous ochreous. Smooth and very shining, the pronotum and the base of the dorsum of the epinotum sparsely and very finely punctured. Pubescence adjacent and sparse, almost obsolete on the thorax. A very few exserted, yellowish pilose hairs on the clypeus and margins of the abdominal segments.

Head subquadrate, a trifle longer than wide (excluding the mandibles) slightly narrowed in front, the sides feebly convex, the posterior margin straight or only shallowly concave. Eyes not large, placed at about the middle of the sides. Anterior margin of clypeus convex. Mandibles armed with 3 or 4 teeth. The scape just reaches the occipital margin; 1st joint of flagellum nearly as long as the 2nd-4th taken together, 2nd and 3rd joints a little wider than long, 4th and 5th as long as wide, the following joints a little longer than wide. Pronotum narrower than the head, very convex transversely, twice as wide as long in the middle; mesonotum a trifle wider than long. All the thoracic sutures distinct, the meso-metanotal and the meta-epinotal fairly deep. Metanotum twice as wide as long, a little more than half as long as the mesonotum, the stigmata fairly prominent. Dorsum of epinotum widened towards the apex, where it is twice as wide as long, joining the shorter and oblique declivity in a gradual curve. The apical third of declivity, near the scale, is almost horizontal. Scale of petiole inclined forwards, longer than

wide at the summit, the latter feebly convex from side to side and subtrenchant. Abdomen ovate, a little longer than wide.

♀ and ♂. I have no specimens of these sexes of the type species, nor am I able at present to obtain access to descriptions of them. They do not probably differ in any great degree from their varieties.

Var. *INTERMEDIA* Emery.

Ann. Soc. Ent. France. Vol. 63, p. 45, ♀, ♀, ♂. 1895.

♀, 2.2 mm. Head and thorax ochreous brown, the thorax paler than the head; abdomen brown. Legs, antennae and mandibles pale ochreous, the flagellum and middle of the femora somewhat fuscous. Entirely smooth and shining. A rather narrower insect than the type of the species, from which it differs chiefly by the longer metanotum, which is quite two-thirds as long as the mesonotum. The dorsum of the epinotum is more convex lengthwise and the declivity is less oblique. The meso-metanotal suture is deeper.

“♀ and ♂. The ♀ has the same colour as the ♀; as in the type, it is less shining and more punctate than the ♀. The ♂ is about as large as the ♂ of the type.”

Capetown, Vrijburg, Bloemfontein, (Simon); Durban & Isipingo, Natal. (S.A.M., R.M., G.A. colls).

Var. *BULAWAYENSIS* n. v.

This form differs from the type of the species, (with which it was included by Forel, Deutsch Ent. Zeitschr. Beiheft, p. 224, 1913) in the longer scapes which extend beyond the hind margin of the head by one-sixth of their length. The pronotum and basal half of the dorsum of the epinotum are not punctured. The metanotum and epinotum are transversely rugulose and somewhat dull. Otherwise like the type of the species.

♀, 4.43 mm. Brown, the legs, antennae and mandibles coloured as in the ♀. Pubescence very fine and short, decumbent, present all over. Pilosity as in the ♀. Smooth and fairly shining all over, at the most only microscopically punctate. Head a little wider than long, the sides parallel behind the eyes, convergent anteriorly in front of them, the posterior margin straight, the posterior angles narrowly rounded. The scapes extend beyond the hind margin of the head by one-fourth of their length. Thorax wider than the head. Mesonotum fairly flat above, wider than long. Scutellum half as long as the mesonotum, the posterior margin widely convex. Epinotum much wider than long, the dorsum and declivity forming a single

and low convexity. Scale as in the ♀. Abdomen elongate, almost parallel-sided, not quite twice as long as wide. Wings long, (anterior wing 4.5 mm.) tinged with yellow, nervures and stigma ochreous.

Bulawayo, nesting in grassy soil.

(R.M., G.A. colls., types in my collection).

Var. MIMA, n. v.

♀, 4.3–4.8 mm. Head and thorax reddish ochreous, the head sometimes darker or brownish, abdomen brown. Legs, antennae and mandibles pale ochreous, the flagellum slightly infusate. Differing from the type species by the colour and shorter scapes, the latter only just reaching the hind margin of the head. It is closely allied to var. *mediorufa* Forel, from which it differs by its larger size and by the shallowly concave hind margin of the head, (convex in *mediorufa*).

Hillside, Bulawayo. (G.A. coll.).

Var. PUNCTUM, Forel.

Ann. Soc. Ent. Belg. vol. 54, p. 448, ♀, ♂. 1910.

♀. 4.3–4.5 mm. Colour as in the type, excepting the flagellum which is dark brown, the first two joints excluded. It differs from the type of the species as follows. The metanotum is much longer, almost as long as the mesonotum; the meso-epinotal suture is very shallow. The pair of stigmata on the epinotum are less prominent and the dorsum of the epinotum is more convex lengthwise. Otherwise like the type of the species.

♀. 3.1 mm. (hitherto undescribed). Smaller than the type of the species and of a more reddish brown colour. The wings are fuscous, not tinged with ochreous as in the type, nervures pale brown. The scapes reach just beyond the hind margin of the head, and the latter is not wider than long. The mesonotum is narrower than in the type species, or as long as wide, and the scutellum is barely more than one-third the length of the mesonotum.

♂. 1.5–2 mm. Pale brown, the head somewhat darker, tarsi and antennae more or less yellowish. Slightly shining, smooth, feebly pubescent. Pilosity wanting. Head subquadrate, clearly wider than long, the posterior half a trifle narrower than the anterior half. Eyes large, occupying the anterior half of the sides of the head; the distance between the posterior ocelli is twice as great as between them and the anterior ocellus. The scape extends a little beyond the posterior margin of the head; 1st joint of the flagellum as long, or nearly as long as, the 3 following joints taken together. The scutellum

is as long as wide, more convex than in the ♀. Scale of petiole shorter and also relatively wider above than in the ♀. Wings as in the ♀, but not very long.

Durban; Basutoland; Grahamstown.

(S.A.M., R.M., G.A. colls.; type of ♀ in my collection).

P. FUSCULA, Emery.

Ann. Soc. Ent. France, vol. 63, p. 45, ♀. 1895.

“♀. 2 mm. Piceous or fuscous, mandibles, the base or the whole of the scapes, first joints of the flagellum, tarsi and articulations of the legs rufescent, very shining, sparingly and very minutely pubescent and sparsely pilose, legs and scapes without erect hairs; head truncate behind, the sides arcuate, mandibles narrow and 5-dentate, the scape extending beyond the occipital margin, thorax narrowed in the middle, the posterior part of the mesonotum (i. e. the metanotum) short and forming a more or less prominent transverse torus; epinotum very convex lengthwise, seen from the side gibbous, scale of the petiole thin and inclined forwards.”

Capetown, (Simon); Natal, (Traegardh).

P. BRUNNI, Mayr.

Ann. K. K. N. H. Mus. Wien, vol. 10, p. 148, ♀. 1895.

♀. 1.3-1.7 mm. Dark orange or reddish ochreous, the apical two-thirds of the flagellum and the basal half of the femora more or less fuscous; a patch between the eyes and the base of the mandibles, a narrow apical band on the first three abdominal segments brown, (somewhat triangularly widened at the sides), the remaining segments more or less brownish ochreous. The pubescence is exceedingly sparse, short and inconspicuous. There are a few yellowish pilose hairs on the clypeus and abdomen. Smooth and very shining.

Head as long as wide, the sides moderately convex, narrower in front than behind, the posterior margin shallowly concave. Mandibles small, with 4 or 5 teeth. Eyes placed in front of the middle of the sides. The scape almost reaches the hind margin of the head; the 1st joint of the flagellum as long as the three succeeding joints taken together, the 2nd and 3rd almost twice as wide as long, the 4th as wide as long. Pronotum very convex, a little wider than long. Mesonotum nearly twice as wide as long, fairly convex transversely, separated from the metanotum by a wide and deep suture. The metanotum is quadrate, as long as wide and as long as, or even a

little longer than the mesonotum. Seen from the side, it is inclined upwards posteriorly but not prominent. Meta-epinotal suture feeble. The dorsum and declivity of the epinotum are not distinctly delimited, they form a single convexity. Scale of petiole low, shorter than the whole petiole measured along the ventral surface.

♀, 3.5 mm. Colour as in the ♂, but a band between the posterior ocelli, the whole or greater part of the scutellum and the apical half of all the abdominal segments dark brown. Pubescence longer and more abundant than in the ♂, especially on the head and abdomen. Pilosity as in the ♂. Smooth and shining. Head and mesonotum very finely and evenly punctured, the punctures piligerous, very small and shallow. Head as wide as long, parallel-sided behind the eyes, gradually narrowed in front of them, the posterior margin moderately concave. Eyes large, occupying a little more than one-third of the sides. Mesonotum as long as wide, three times longer than the scutellum. Epinotum wider than long, oblique and feebly convex from base to apex. Abdomen longer than wide. Wings tinged with ochreous, stigma and nervures ochreous.

♂, 1.4 mm. Pale ochreous brown, the head almost blackish brown, antennae and legs fuscous yellow. Very smooth and shining. Pubescence very fine and scanty. A few erect hairs on the clypeus and scutellum. Head subquadrate, wider than long, a little wider in front than behind. The eyes occupy more than the anterior half of the sides. The scape reaches the posterior margin of the head. Thorax like that of the ♀, but the scutellum is relatively larger, or about half as long as the mesonotum. Scale of petiole low, inclined very obliquely forwards, as wide as high. Abdomen ovate.

S. Rhodesia, fairly common and nesting under the bark of trees; Natal, (Traegaardh); Delagoa Bay, (Brauns).

(S.A.M., R.M.G.A. colls.).

Var. PUBESCENS, Forel.

Ann. Soc. Ent. Belg. Vol. 57, p. 140, ♂, 1913.

♂. Like the type of the species and differing from it only in the more abundant and longer pubescence, the wider thorax which is a little less constricted at the meso-metanotal suture, the shorter metanotum which is wider than long and only half as long as the mesonotum.

Bulawayo and Plumtree, S. Rhod.

(R.M., G.A. colls.).

3rd SECTION. EUCAMPONOTINAE.

TRIBE PRENOLEPIDINI, Forel.

GENUS PRENOLEPIS, Mayr.

Europ. Formicid., p. 52, 1861.

Characters.

♂. Antennae 12-jointed, the scape sometimes very long, inserted at the sides of the frontal area, not far from the hind margin of the clypeus. Maxillary palpi 6-jointed. Mandibles rather narrow, not large. Clypeus large. Frontal carinae short; frontal area not sharply defined. Eyes usually large. No ocelli. Pro-mesonotal, meso-metanotal and meta-epinotal sutures distinct. The metanotum short in the middle but fairly apparent at the sides, lower than the meso- or the epinotum. The latter unarmed. Petiole short, bearing a scale which is inclined forwards. Abdomen widest in front, somewhat overhanging the petiole. A coarse and long pilosity frequently present.

♀. Antennae 12-jointed. Pronotum not exposed above, or only very narrowly so in the middle. Mesonotum and scutellum fairly flat above, the former with well defined parapsidal sutures, and the scutellum sometimes with a median longitudinal impression. Abdomen large. Scale of petiole thicker than in the ♂ and also lower. Wings with I cubital cell.

♂. Antennae 13-jointed, smaller than the ♀, or even smaller than the ♀. Eyes and ocelli very large.

Distribution. Both hemispheres.

We have only two species in our region; they are easily distinguishable by the length of the scapes.

P. LONGICORNIS, Latreille. (Plate IX, fig. 133).

(as *Formica*) Hist. Nat. Fourmis, p. 113, ♀ 1802.

Jerdon, Madras Jour. Litt. Sc. vol. 17, p. 124, ♀. 1851.

André. Ann. Soc. Ent. France, (6) vol. I, p. 60, ♂. 1881.

♂. 2.7–3 mm. Pale smoky-brown, mandibles, antennae and legs much paler, the tarsi slightly ochreous. Smooth and moderately shining. Pubescence microscopic, present only on the legs and antennae. The body has a moderately abundant, coarse, blunt, erect, long and greyish white pilosity, less plentiful on the thorax than elsewhere. A few thinner hairs on the femora. The chitinous integument is rather thin. Head oval, excluding the mandibles and eyes not quite

half as long again as wide. Eyes large, convex, prominent, placed at the middle of the sides of the head and rather high up. Clypeus subcarinate, very convex transversely, the anterior margin feebly excised in the middle. Mandibles armed with 5 small teeth, the external margin much longer than the masticatory. Antennae very long, the scape two-thirds longer than the head and extending back as far as the meta-epinotal suture; the flagellum filiform, one and a half times longer than the scape, all the joints much longer than wide. Dorsum of the thorax fairly flat when seen from the side, depressed a little over the metanotum. Pronotum one-third wider than long, not very convex transversely. Mesonotum as long as wide, a little narrower behind than in front. Metanotum longer at the sides than in the middle, where it is about one-fifth as long as the mesonotum. Dorsum of epinotum half as long again as wide, joining the much shorter and oblique declivity in a low curve. Scale of petiole inclined forwards, the posterior face twice as long as wide, the anterior face very short. Abdomen ovate. Legs long and slender.

♀. 5.5 m.m. Dark brown, the antennae and tarsi brownish ochreous, legs paler brown, the coxae and basal half of the femora somewhat ochreous. Apical margins of the abdominal segments pale fuscous yellow. Clothed with a short, but fairly dense pubescence all over, exceedingly fine on the legs and antennae. The coarse pilosity which is present in the ♂ is entirely absent. Dull. Microscopically rugulose, the sculpture somewhat stronger on the head than elsewhere. Head quadrate, and excluding the mandibles as long as wide. Antennae long, the scape extending beyond the hind margin of the head by two-thirds of its length. The eyes occupy the middle third or a little more of the sides of the head; ocelli moderately large. Mandibles 5-dentate, feebly aciculate. Pronotum very narrowly exposed above; mesonotum a little wider than long, fairly flat in its posterior part. Scutellum fairly flat, with a shallow median longitudinal impression; metanotum distinct. Dorsum and declivity of the epinotum forming a single steep plane. Scale of petiole completely hidden from above by the large and overhanging abdomen, which is oval and about one-third longer than wide. Deälated. Otherwise like the ♂.

“♂, 3 mm. Similar to the ♀ but much paler in colour, with the same erect and rather coarse pilosity. Head oval, eyes and ocelli very large and prominent; mandibles narrow and feeble; clypeus as in the ♀. Thorax and abdomen moderately massive, the latter elongate, oval, convex above; the external genitalia large and prominent.” (ex. Bingham, *Ants of India*).

Durban. This is a tropicopolitan species which has also been

introduced with plants and permanently established in many hothouses in temperate countries.

(S.A.M., R.M., G.A. coll.).

P. TRAEGAORDHI, Forel, var. *NATALENSIS*, Forel.

Bull. Soc. Vaud. Sc. Nat. vol. 50, p. 318, ♀. 1914.

♂, 2.5–3 mm. Head and abdomen brown, the head darkest, thorax, legs and antennae brownish ochreous, the tarsi and mandibles ochreous. Pubescence moderately abundant, fine, adjacent, and of a pale greyish brown colour, very sparse on the pro-mesonotum. Pilosity coarse, dark brown, pointed, not blunt and not so long as in *P. longicornis*, shorter and more oblique on the legs, scapes and sides of the head than elsewhere. Pronotum and declivity of the epinotum smooth and very shining, abdomen superficially rugulose and fairly dull, the head shining and very sparsely punctured. Mesonotum and dorsum of the epinotum moderately shining and very feebly punctured. Head, excluding the mandibles, a little longer than wide, hardly narrower in front than behind, the sides subparallel, the posterior angles narrowly rounded. Clypeus very convex, subangular in the middle but not carinate, its anterior margin straight. Mandibles narrow, 6-dentate. Eyes placed in front of the middle of the sides. Scapes much shorter than in *longicornis*, extending beyond the hind margin of the head by about one-third of their length; 2nd joint of flagellum hardly longer than wide, 3rd and 4th one and a half times longer than wide, all the rest somewhat longer (in *longicornis* no joint is less than two and a half times longer than wide). Pronotum convex lengthwise and transversely, one and a half times wider than long. Mesonotum oval, slightly longer than wide, forming in profile with the pronotum a fairly strong convexity, not flat as in *longicornis*. Metanotum more deeply depressed than in that species, very short in the middle. Dorsum of epinotum distinctly convex lengthwise and transversely, wider than long, a little shorter than the oblique declivity. Scale of petiole slightly wider above than below, its dorsal edge convex from side to side and almost trenchant. Abdomen oval. Legs not long and not very slender.

Durban. (W. H. B. Marley, C. P. Merve).

Forel remarks of this variety, "Smaller than the type species. Head narrower, relatively longer, with the sides less convex. Pubescence more feeble. The mesonotum is also less convex and the epinotum lower, with the declivity much shorter and less distinct, whereas the dorsum is longer and less convex. Otherwise identical,

the erect pilosity the same and the colour similar but a shade darker."

I have specimens from Durban (leg. C. P. v. d. Merve), which agree very well, according to the description cited above, with the type species, but the colour is not lighter than in var. *natalensis*, but darker, being of a very dark brown, the head almost black.

(S.A.M., R.M., G.A. colls.).

TRIBE OECOPHYLLINI, Forel.

GENUS OECOPHYLLA, Smith.

Journ. Proc. Linn. Soc. Zool. IV, Suppl. p. 404, 1860.

Characters.

♂. Antennae 12-jointed, long, inserted behind the frontal area but near the anterior ends of the frontal carinae; 1st joint of the flagellum very long. Maxillary palpi 5-jointed. Mandibles large, the masticatory margin long, longer than the basal, armed with numerous small teeth, the apical one large, acute and curved. Clypeus large; frontal area subtriangular. Frontal carinae short and fairly far apart. Eyes large, very convex and outstanding, almost hemispherical. Pronotum narrowed into a long neck in front. Promesonotal suture well defined, the meta-epinotal a little less so. Thorax strongly constricted and depressed along the meso- and metanotum, seen in profile, saddle-shaped. Epinotum unarmed, much higher than the metanotum. Petiole elongate, incrassate posteriorly, the posterior end produced into a small lamelliform flap on each side and embracing the abdominal articulation. Abdomen oval or subcircular. Legs long and slender.

♀. Antennae as in the ♂. Pronotum not visible from above. Mesonotum wide and gibbous in front. Scutellum much wider than long. Petiole subquadrate, short, seen from the side more or less obtusely conical. Wings with 1 cubital, and 1 closed radial cell which is rather long.

“♂. Head relatively small; the mandibles porrect, very hairy and with an indistinct masticatory margin; ocelli prominent; eyes very large and prominent, giving great width to the head; antennae 13-jointed, filiform, the scape long, thickening slightly towards the apex, the basal joint of the flagellum remarkably clavate. Thorax very massive, the mesonotum broad and gibbous anteriorly, the pronotum sunk well below its level in front; scutellum large, laterally compressed, the rest of the thorax and epinotum sloping gradually

towards the apex of the latter. Petiole long, linear, scarcely, thickened at all; abdomen depressed, oval; external genitalia large."

I have not seen the ♂♂ of this genus, and the generic characters quoted above are taken from Bingham's "Ants of India".

Distribution. Tropics of the Eastern Hemisphere.

O. SMARAGDINA, Fabr., (Plate IX, figs. 134, 134a).

Syst. Ent. p. 828, ♀. 1775,

Guérin, (*Formica macra*) Voyage Coquille, Zool. II, p. 202, ♀. 1830.

Jerdon, Madras Jour. Litt. Sc. Vol. 17, p. 121, ♀, ♀, ♂. 1851.

♀, 7-11 mm. Yellowish (buff) red, the abdomen similar but with a brownish tinge as well, the apical margins of the segments paler and translucent. Pubescence short, decumbent, pale yellowish, fairly abundant all over; pilose hairs thin, present only on the anterior margin of the clypeus and the apical margins of the abdominal segments. Exceedingly finely rugulose and dull all over.

Head, including the closed mandibles, subtriangular with the angles rounded, widest behind, the posterior margin straight, the sides moderately convex, high in the middle and strongly convex from side to side. Mandibles closely striolate, the teeth black. Clypeus half as long as wide, raised towards the middle, the anterior margin convex. The scape, strongly incrassate near the apex, extends beyond the hind margin of the head by two-thirds of its length. All the joints of the flagellum longer than wide and decreasing in length progressively from the 1st to the penultimate joint. Pronotum narrower than the head, and including the neck-like portion longer than wide. Mesonotum narrowed a little behind, about as long as wide in front. Metanotum short in the middle, convex and considerably constricted in front, convex and much longer at the sides, in such a way as to embrace the anterior part of the epinotum; metanotal stigmata large and prominent. Epinotum very convex lengthwise, the dorsum about as long as the declivity. Petiole widening and rising gradually from its base to the posterior fourth, where it becomes slightly constricted and inclined downwards, produced on each side into a small flap embracing the articulation of the abdomen.

Abdomen oval or subcircular. Legs very long, the posterior femora as long as, or a little longer than the tibiae.

♀, 15-18 mm. Characters of the genus. Normally of a beautiful emerald-green, with a peculiar pellucid translucent appearance when alive. Varieties are found of a pale yellow, with more or less brownish

markings on the head and thorax". The colour is lost in dried or spirit-preserved specimens.

♂, 6-7 mm. More or less similar in colour to the ♀, sometimes dark brown, very pilose, the hairs brown and semi-erect; wings lacteous, hyaline, nervures yellowish brown. For the rest the characters of the genus."

The descriptions of the ♀ & ♂ quoted above are taken from Bingham's "Ants of India".

This species has so far been recorded within our limits only from Lourenço Marques (leg. K.H. Barnard). It is a decidedly tropical species and is not likely to be found except on the northern half of the east coast of the S. African region.

It inhabits trees and bushes, making its nest between leaves. It has the remarkable habit of using its larvae in order to obtain the silk with which the leaves are bound together to form the nest. This is effected by several workers holding the leaves in position while other workers, each bearing a larva in its jaws, move up and down the edges of the leaves and force the larvae to emit the silk from their glands. The silk-glands of the larvae of this species are enormously developed. A fuller account of the methods employed by this ant in making its nest may be found in Wheeler's "Ants", pp. 216-221. The larvae of *Oecophylla* are exceptional in not spinning cocoons. Whether this condition has been brought about by the glands being exhausted during the earlier stages of larval life cannot be decided at present. There are however, species of *Polyrachis* and *Camponotus* which also use their larvae for the same purpose as *Oecophylla*, but in some of these the larvae nevertheless manage to spin cocoons before pupating. (see Wheeler, Contr. Ent. Lab. Bussey Inst. Harvard Univ. no. 95).

(S.A.M., G.A. colls.).

TRIBE CAMPONOTINI, Forel.

Including the two genera *Camponotus*, Mayr. and *Polyrachis*, Fab.

GENUS CAMPONOTUS, Mayr.

Europ. Formicid. p. 35, 1861.

Characters.

♀. Antennae 12-jointed, inserted at the sides of the frontal carinae, some distance from the frontal area and from the clypeus; flagellum filiform. Dimorphic or polymorphic, having two or three fairly dis-

inct forms, i. e. ♂ or ♀ major, ♀ media and ♀ minor. No ocelli, but sometimes vestiges of same occur as indistinct pits. Frontal carinae more or less sinuate, usually well defined. Thorax usually widest in front, the pro-mesonotal and meso-metanotal or meso-epinotal sutures usually well defined. Epinotum unarmed, in some subgenera more or less subtruncate. Petiole of varying form, (see subgenera). In the ♂ the head is very large, subtriangular and with the angles rounded, or subcordate, wider than the thorax. In the ♀ minor the head is usually elongate, and more often longer than wide. The ♀ media has the head intermediate in form between that of the ♂ and of the ♀.

♀. Antennae as in the ♀. Rarely larger than the ♂; the head also not so wide as in that form. Ocelli not very large. Thorax of the form usual to the sex, the pronotum rarely exposed above. Wings with a closed radial and I cubital cell. Abdomen usually oblongo-ovate. Otherwise like the ♂.

♂, Antennae 13-jointed, scape as long or at least half as long as the flagellum. Ocelli and eyes large. Petiole thicker than in the ♀ or ♀. Abdomen small, considerably narrowed towards the apex or lanceolate, the genital armature small. Legs slender and feeble. Mandibles small and usually edentate except one apical tooth. Wings as in the ♀. Distribution. Both hemispheres.

This is an enormous genus comprising 1000 or more different forms. With the exception of *C. maculatus* and its subspecies and varieties, the identification of our species, with reference to the ♂, is not attended with much difficulty, as they fall into fairly easily recognised subgenera. This however is not the case with *C. maculatus*, a species which, with numerous and closely related races and varieties, is distributed over a large part of the globe. In the ♀ media and minor castes the specific characters are but slightly differentiated, and it is therefore essential that the ♂ ♂ should be obtained with the smaller ♀ ♀ whenever possible.

The degree of convexity of the thorax is often a valuable diagnostic character, although it is difficult to measure without the aid of a drawing-apparatus on the microscope. The standard which I have adopted is the ratio of the height to the length, the latter being measured in a straight line from the anterior point of the pronotum to the apex of the epinotum at its junction with the petiole, and the former by the length of the perpendicular from the highest point. These measurements are expressed by the symbols H.L. in the following pages, e. g. L. = $3\frac{1}{2}$ H.

The genus has recently been divided by Dr. Forel* into 25 subgenera, of which 13 are represented in our region. These subgenera are characterised by Dr. Forel as follows:

1. SUB-GENUS CAMPONOTUS, Mayr, s. str.

Type *C. herculeanus* L. Mandibles with 4 or 5 teeth, rarely 6. Clypeus neither carinate nor lobed. Head not truncate. Dorsum of thorax convex, neither excised nor marginate, widened in front, narrowed behind. Species usually large, robust and usually lignicolous, excavating galleries in wood. With transitions towards *Myrmoturba*. In all countries excepting Australia.

2. SUB-GENUS MYRMOTURBA, Forel.

Type *C. maculatus* F. Mandibles with 7 or 8 teeth, rarely 6. Clypeus lobed and carinate. Dorsum of thorax convex, neither excised nor marginate, widened in front, narrowed behind. Head of ♀ minor nearly always with a distinct hind margin. Living in the ground or under stones.

3. SUB-GENUS MYRMOPHYMA, Forel.

Type *C. quadrisectus* Smith. Vertex of head more or less strongly swollen. Otherwise in shape and stature similar to *Myrmoturba*. The clypeus, however, is more often without a carina and has a lobe which is narrowed and often dentate or emarginate in front. Mandibles usually with 6 teeth. Australian, Malayan and African. With transitions towards *Myrmoturba*.

4. SUB-GENUS MYRMOPSAMMA, Forel.

Type *C. mystaceus* Emery. Mandibles 5-dentate. Clypeus not carinate. Anterior margin of the head, above and below, and often the upper third of the clypeus furnished with transverse rows of long psammophore bristles or ammochaetae. Form of the body similar to that of *Myrmoturba*. African species of arenicolous habits. The scape sometimes has a dentiform process at the base.

5. SUB-GENUS DINOMYRMEX, Ashmead.

Type *C. gigas* Latr.. Very large or long species. Head of the ♀ minor narrowed behind into a neck, or at least with the posterior margin reduced to the limits of the articular border, i. e. obsolete. Otherwise like *Myrmoturba*.

* See Mem. Soc. Ent. Belg. Vol. 20, pp. 87 et seq. 1912 and Rev. Suisse Zool. Vol. 22, pp. 257—275, 1914.

6. SUB-GENUS MYRMOSERICUS, Forel.

Type *C. rufoglaucus* Jerdon. Identical with *Myrmoturba* but entirely dull, very finely sculptured, with a silky sheen and more or less covered with a fairly abundant pubescence on the whole body, especially the abdomen.

7. SUB-GENUS MYRMOSAGA, Forel.

Type *C. quadrimaculatus* Forel. Dorsum of epinotum concave, saddleshaped, the rest of the thorax convex, not marginate. Smallish species, generally shining. Shape generally like that of *Myrmoturba*, but more robust. The clypeus carinate and with a short lobe. Mandibles usually with 6 teeth.

8. SUB-GENUS MYRMAMBLYS, Forel.

Type *C. fastigatus* Roger. Head subtruncate in front, mandibles thick, clypeus high and narrow, the lateral pieces obsolete or nearly so. The ♀ major and ♀ minor strongly dimorphic, but the former do not constitute a distinct ♂ caste. Living in hollow stems and trunks of trees, the ♀ major guarding and closing the entrances to the nest with their subtruncate heads.

9. SUB-GENUS COLOBOPSIS, Mayr.

Type *C. truncatus* Spin. (Characterised by its strong dimorphism). The ♂ has the head sharply truncate in front and nearly always with the truncate area bounded by a sharp raised margin. The clypeus is usually continued behind past the truncate area, thus forming an angle with its anterior portion. The ♂ acts as a janitor, closing the entrance to the nest with the truncated face of the head. Some species have the thorax excised (i. e. at the meso-epinotal suture). The species live in the wood of trees, in stems, galls and hollow spines.

10. SUB-GENUS MYRMOTREMA, Forel.

Type *C. foraminosus* Forel. The ♀ and ♀ major with the anterior part of the head abundantly pitted. Clypeus usually without lobe or carina, mandibles usually 6-dentate. Thorax not marginate, convex in front, narrowed behind. Entirely African.

11. SUB-GENUS ORTHONOTOMYRMEX, Ashmead.

Type *C. lateralis* Ol. Epinotum cuboid, wide, distinctly marginate,* usually with a distinct angle between its two faces. Thorax usually, but not always emarginate between the mesonotum and the epinotum.

* Not in all our species.

Generally squat species, with the head short, mandibles thick and armed with 5 or 6 teeth. Head not truncate. Partially terrestrial and partially arboreal.

12. SUB-GENUS MYRMOSPINCTA, Forel.

Type *C. cinerascens* F. Thorax excised between the mesonotum and the epinotum, but not marginate, especially the epinotum. Head simple.

13. SUB-GENUS MYRMEPOMIS, Forel.

Type *C. fulvopilosus* De Geer. Large species. Pronotum of ♂ major with dentate or angular shoulders. Thorax not excised. Epinotum not dentate.*

These divisions are not entirely natural and will no doubt undergo revision from time to time, but they are of use in facilitating the study of this very large genus. In the case of some species, it depends on the degree of importance which one is inclined to attach to each of two or more characters whether the species be placed in this sub-genus or that. For instance, *C. Dofleini* Forel is included in the sub-genus *Myrmosphincta* by Dr. Forel, on account of the structure of the epinotum. But the degree of difference, even including the epinotum, which this species shows to *C. Mayri* (sub-gen. *Orthonotomyrmex*) is slight, or at least of a lower degree of value in classification than the points of resemblance. I have therefore preferred to place it in the sub-genus *Orthonotomyrmex*. Moreover, *C. scalaris* Forel, our other representative of the sub-genus *Myrmosphincta*, is a totally different looking insect, and to place it and *Dofleini* together is but to enhance the artificial character of these sub-genera.

SUB-GENUS CAMPONOTUS, Mayr, s. str.

For characters see table of sub-genera.

We have but one species in this sub-genus, *C. belligerum* Santschi. It bears a close resemblance to *C. maculatus*, from which it may be distinguished by the structure of the clypeus and mandibles and the dorsum of epinotum. From the type of the subgenus, *C. herculeanus*

* We have only one species, with several races and varieties, all of which may be recognised by the presence of a thick and oblique pilosity on the abdomen, composed of blunt quill-like hairs or bristles, nearly always hiding the colour and sculpture of the integument.

it differs somewhat in the shape of the epinotum, which approximates to that of *C. maculatus*, having the declivity very oblique and merging gradually into the dorsum. The latter is however, different from that of *maculatus*, in that it is not compressed laterally and not ridge-like or cristate above.

C. BELLIGERUM, Santschi.

Ann. Soc. Ent. France, vol. 88, p. 384, ♀, ♂. 1920.

♀, 15 mm. Head ferruginous (burnt sienna), an indistinct patch on the middle of the vertex, the cheeks and the anterior half in front of the eyes, dark brown or black. The inner edge of these dark lateral areas forms a straight line stretching from the anterior ends of the frontal carinae to the anterior margin of the eyes. Mandibles and basal two-thirds of the scapes dark castaneous, the apical third of the scapes black, the flagellum ferruginous. Thorax and petiole ferruginous, but a little paler than the head. Abdomen brownish black, the base and basal half of the sides of the 1st segment and a small and very diffuse spot on each side of the 2nd and 3rd segments dark ochreous, the apical margins of all the segments testaceous. Legs reddish ochreous, becoming gradually darker towards their apices. A very short and inconspicuous pubescence on the legs and antennae, abundant only on the flagellum, absent from the thorax and abdomen, on the cheeks sparse and inserted in shallow foveae. Pilosity short and sparse, yellowish, present only on the clypeus, meso- and epinotum, scale and apical margins of the abdominal segments. Tibiae cylindrical, strongly setose below; posterior metatarsi with two dense rows of subspatulate hairs on their lower surfaces, (this character occurs in several species of *Camponotus*). Moderately shining, the abdomen more so than the rest of the body. Sculpture like that of *C. maculatus*, but the head is also sparsely and shallowly punctured, the punctures pubescent. Mandibles with 5 acute teeth, finely striolate and strongly punctured; the basal margin much longer than in any of the *Myrmoturba* group, being almost as long as the masticatory margin. Head quadrate, barely longer than wide, the sides feebly convex, the posterior margin straight, the posterior angles narrowly rounded, as wide in front as behind, except the anterior 7th, which is a little narrower. Median area of clypeus arcuately produced in front but not lobed, the anterior margin crenulate, almost twice as wide in front as long. Frontal area small, triangular and well defined. Frontal

carinae feebly sinuate, hardly convergent behind. Eyes rather large, placed a little behind the middle of the sides. The scapes extend beyond the hind margin by as much as their apical width. Pronotum not in the least flattened above, but convex from side to side and lengthwise, two-thirds wider than long in the middle. Pro-mesonotal suture distinct. Mesonotum very little wider in front than behind, as long as wide. Meso-epinotal suture feeble. Dorsum of epinotum rather broad, two and a half times longer than wide, moderately oblique, arcuate from side to side, joining the oblique declivity in a widely rounded angle. The declivity is two-thirds as long as the dorsum and slightly convex from above to below. Scale of petiole rather narrow, as high as, or a little higher than the petiole is long below, both faces moderately convex, subacuminate above.

♀ minor, 8 mm. Head more or less yellowish brown, the cheeks darkest. Mandibles pale castaneous, antennae brown. Thorax dirty ochreous, the sides and the petiole somewhat fuscous. Abdomen brownish black, the apical margins widely pale testaceous, the 2nd segment with a pale ochreous spot on each side and extending from the base to beyond the middle of the segment. Legs pale ochreous, darkening towards their apices. Sculpture, pilosity etc. as in the ♂, but the head is more shining and almost impunctate. Head slightly and gradually widened from the eyes towards the anterior margin, where it is widest, nearly one-third longer than wide. The sides behind the eyes convex, convergent posteriorly to the very narrow and indistinct posterior margin. Mandibles as in the ♂, but narrower and longer, the teeth very acute. Clypeus very convex transversely but not carinate and not lobed in front, the anterior margin arcuate. The eyes are very convex, large, placed behind the middle. The scapes extend beyond the hind margin of the head by nearly half their length. Pronotum less convex transversely than in the ♂. Mesonotum narrowed behind. Dorsum of epinotum long, barely delimited from the declivity, the two faces forming a more or less continuous oblique plane. Scale of petiole cuneiform, seen from the side its outline forms an isosceles triangle, the base of which is slightly convex and forms the anterior face, the posterior face being as long as the ventral margin and longer than the anterior face. Otherwise like the ♂.

The ♀ minor resembles that of *maculatus* and some of its varieties, but is easily distinguishable by the 5-dentate mandibles, the clypeus, the thick scale and the subspatulate hairs on the posterior metatarsi.

Ababis, S. W. Africa. (R. W. E. Tucker).

(S. A. M., G. A. colls.)

SUB-GENUS MYRMOTURBA, Forel.

For characters see table of subgenera.

♂. In this sub-genus, the head of the ♂ is usually more or less triangular and with the angles rounded, or subcordate; the posterior margin always more or less concave. The scapes are rarely long, and in few of them do they extend beyond the hind margin by as much as one-fourth of their length. In taking the measurement, it should be noted that the length of the head is taken from the anterior margin of the clypeus to the level of the posterior angles; in measurements of the scape, that limb should be turned back parallel to the long axis of the head, not directed obliquely to the posterior angles. The pronotum is usually more or less convex transversely and slopes downwards in front. In many species the pronotum has two shallow impressed lines, one on each side of the middle, oblique and convergent anteriorly. In the ♀♀ these lines are more or less parallel. They are inconspicuous as a rule, and not easily seen unless the insect is held at a certain angle.

The mesonotum is narrowed gradually backwards and the epinotum is frequently widened towards the brow of the declivity. The thorax is therefore always somewhat constricted at the meso-epinotal level. Usually a trace of the metanotum is visible, but as this segment is very small and inconspicuous, the suture between it and the epinotum is referred to in the following pages as the meso-epinotal. The dorsum of the epinotum is narrow, the sides converging above to form a narrow and rounded angle (i.e. the actual dorsum) the dorsum nearly always merging gradually into the declivity, very rarely subangularly. The degree of convexity of the dorsal profile of the thorax varies, but in many cases (*maculatus* and its races and varieties), to so slight a degree that it is difficult to appreciate. The scale of the petiole also exhibits slight variations, but on the whole it cannot be relied on as a diagnostic character of much value. Some authors have placed a great deal of emphasis on the absence or otherwise of short spines or setae on the lower surface of the tibiae and also on the shape of that joint. In cross-section it is either round, quadrate-oblong or prismatic. The normal fundamental sculpture of the sub-genus, as exemplified by *C. maculatus*, consists of a very fine and even rugulosity on the thorax and abdomen, somewhat reticulate in parts, and on the head of a reticulation which merges into a rugulose sculpture here and there. The sculpture in most of the species is barely appreciable under a magnification of less than 16 diameters. The pubescence is conspicuously scanty on

the body, and not very apparent even on the legs and antennae. The pilosity is scanty, consisting as a rule of a few marginal bristly hairs on the abdominal segments, on the anterior margin of the clypeus, and a few isolated hairs on the pronotum, brow of the declivity and the upper edge of the scale.

♂ media. This differs from the ♀ in having the head more elongate, widest at, or a little behind the middle, very little narrower in front than behind, often parallel-sided. The sculpture, especially of the head is usually finer, and if spots of pale colour are present on the abdomen of the ♀, these are usually indistinct or less clearly defined in the ♂ media. The scale is usually thicker than in the ♀. The antennae are also proportionately longer.

♂ minor. Antennae relatively much longer than in the ♀, and a little longer than in the ♂ media. The head is nearly always wider in front than behind, that is, parallel-sided in front of the eyes and gradually narrowed behind the same to the posterior margin. The thorax is more compressed behind and the scale of the petiole is thicker, and more convex in front. The abdominal maculae are usually indistinct. Metanotum entirely obsolete in most cases.

♀. In this sex the shape of the head resembles that of the ♂ media, being usually longer than wide, very little narrower in front than behind and widest at the middle or a little behind it. The sculpture is similar to that of the ♂ media. The mesonotum is fairly flat above, convex in front from side to side. The two faces of the epinotum usually fairly clearly defined. Scale like that of the ♀ but somewhat thinner. Abdominal maculae as clearly defined as in the ♀.

♂. The anterior portion of the head, in front of the eyes, usually parallel-sided, the posterior portion, including the eyes, more or less trapezoidal or semi-circular, narrowing gradually backwards to the narrow posterior margin, which is considerably narrower than the clypeal margin. Thorax like that of the ♀, but the epinotum is much lower, the dorsum and declivity less clearly defined. Scale of petiole thicker and lower, the dorsal edge usually emarginate and thick. Abdomen laceolate-ovate. Sculpture and pilosity as in the ♀.

C. maculatus is an extraordinarily variable species, widely distributed over the warmer regions of the globe, and comprising about 100 different races and varieties. In our region alone it is represented by about 30 different forms. In view of the probability that there are many intermediate forms, at present unknown, but which will be discovered in the future, it does not seem wise to burden with varietal names all the different manifestations of variability which

Key to the species of Myrmodurba, 21 21.

- * Excepting the mandibles, apical margin of the clypeus, the lower part of the sides of the thorax, and the extreme apical margin of the abdominal-segments.

* Excepting the mandibles, apical margin of the clypeus, the lower part of the sides of the thorax, and the extreme apical margin of the abdominal-segments.

- (28) 27. Head longer than wide; the clypeus fairly distinctly carinate and sparsely pilose *maculatus*, race *pictiventris*, Mayr.
- (27) 28. Head as wide as long; clypeus barely carinate, pilose only on the anterior margin *maculatus*, race *Radamae*, var. *mixtellus*, Forel.
- (26) 29. Head black or dark brown.
- (31) 30. Head as wide as long, its anterior margin not quite two-thirds as wide as its greatest width; hind margin shallowly concave
maculatus, race *Traegaordhi*, Santschi.
- (30) 31. Head as wide as long, but usually a little longer than wide, its anterior margin half, or a little more than half as wide as its greatest width; hind margin more deeply concave *maculatus*, Fab..
- (25) 32. More than 12 mm. long.
- (34) 33. Entirely ochreous, the head a shade darker in front
maculatus, race *cognatus*, Smith, var. *boera*.
- (33) 34. At least the head and the abdomen partly, or entirely dark brown or black.
- (36) 35. Head, including the closed mandibles, barely more than one-sixth longer than wide; abdomen paler at the base, hardly maculate
maculatus, race *thoracicus*, Forel, var. *incommoda*, Forel.
- (35) 36. Head, including the closed mandibles, longer.
- (40) 37. Pale spots on the first two abdominal segments large; thorax ochreous brown-red.
- (39) 38. Spots on the 2nd abdominal segment meeting, or almost meeting in the middle, their outer margins not sharply defined
maculatus, race *Liengmei*, var. *Hansingi*, Forel.
- (38) 39. Spots on the 2nd segment not meeting in the middle, their outer margins sharply defined; (head quite one-third longer than wide)
maculatus, race *Liengmei*, var. *importunoides*, Forel.
- (37) 40. Pale spots on the first two abdominal segments small and fairly distinct; pro-mesonotum blackish brown above, or if brownish red, then the abdominal spots are diffuse.
- (42) 41. Pro-mesonotum brownish red; abdominal spots diffuse
maculatus, race *manzer*, Forel.
- (41) 42. Abdominal spots distinct.
- (44) 43. The declivity of the epinotum fairly distinct from the dorsum, and steep; spots on the 3rd abdominal segment ochreous and sharply defined
 race *Liengmei*, var. β (= *melanoenemis*, Santschi).
- (43) 44. Declivity of epinotum very oblique, merging gradually into the dorsum.
- (46) 45. Head and thorax dark brown; abdominal spots dark ochreous brown and indistinct race *Liengmei*, var. γ (= *contaminata*, Santschi).
- (45) 46. Head and thorax black; abdominal spots pale straw-yellow, distinctly defined race *Liengmei*, var. δ .

The following forms, being unknown to me in nature have been omitted from the key; *maculatus*-race *atramentarius* Forel and var. *liocnemis* Emery; *maculatus*-race *Fornasini* Emery; *C. Bertolonii* Em., *C. caffer* Em., *C. Bianconii* Em.. The *C. diabolus* Forel, also omitted, appears to me to be a variety of the race *Empedocles* Forel.

C. MACULATUS, Fab.: (Plate IX, figs. 149, 149a, 150).

Spec. Insect. I. p. 491, ♀. 1781.

(*Formica thoracica*) Syst. Piez. p. 395, ♀. 1804.

Mayr, Verh. Zool. Bot. Ges. Wien, vol. 12, p. 654, ♂. 1862.

Donisthorpe, Ent. Record, vol. 27, p. 221, ♀. 1914.

♀. 12 mm. Head black, thorax black or blackish brown above, the lateral margins of the pronotum, the mesopleura, the lower half of the epinotum and the lower third of its declivity ochreous, scale ochreous or brownish ochreous, abdomen black, with dull ochreous spots on each side disposed as follows: 1st segment, on the basal half or two-thirds an elongate and not very sharply defined pair of spots which are usually confluent at the base: 2nd segment, a pair of round spots, rarely extending beyond the basal half of the segment: 3rd segment, a pair of much smaller spots of a dark brownish ochreous colour with diffuse margins. Femora and coxae ochreous, tibiae and tarsi blackish brown. Scapes black, flagellum testaceous and becoming darker or brownish towards the apex. The extreme apical margins of the abdominal segments testaceous. Head and thorax dull, abdomen moderately shining. A few erect, brownish yellow pilose hairs arising from shallow pits, on the head, pronotum and apical margins of the abdominal segments; on the brow of the epinotum and edge of the scale some similar but black hairs. A few short and yellowish hairs on the anterior margin of the clypeus. Sides of the head, legs and scapes with a sparse, short and adjacent pubescence, the flagellum with a more abundant but finer pubescence. Head very finely and closely reticulate, with a few small and very shallow punctures scattered over the clypeus and the front of the cheeks. Thorax and abdomen very finely rugulose.

Head as long as wide, narrowed in front, the sides convex and converging anteriorly, the hind margin distinctly concave, the posterior angles rounded. Median area of clypeus produced into a rectangular lobe in front, projecting over the base of the closed mandibles. Clypeus carinate, the carina not reaching the anterior margin which is feebly crenulate. Mandibles dull, sparsely and finely punctured, armed with 7 acute teeth. The scapes extend a little beyond the hind margin of the head, all the joints of the flagellum much longer than wide. Eyes feebly convex, placed in the middle of the sides. Degree of convexity of thorax, $L. = 3\frac{1}{3} H$. Pronotum nearly one and a half times wider than long in the middle; mesonotum slightly wider than long, metanotum distinct and twice as wide as long. Declivity of epinotum smooth and shining, otherwise not clearly

delimited from the much longer and oblique dorsum. Scale of petiole twice as high as thick (from front to back), convex above from side to side, the edge trenchant, the anterior face convex, the posterior face almost flat. Femora and tibiae compressed, oblong in cross-section, hardly prismatic.

♂ media, 9-10 mm. Head dark brown, thorax reddish pale brown, darkening posteriorly, abdomen black with the pale spots obsolete or nearly so, lower part of the sides of the thorax, the scale and the legs ochreous, the posterior tibiae and tarsi somewhat brownish but not dark brown as in the ♀.

Head about one-fourth longer than wide, widest across the eyes, which are relatively larger than in the ♀ and placed just behind the middle; the sides of the head moderately convex, the posterior margin very little wider than the anterior and less concave than in the ♀, the posterior angles widely rounded. The scape extends beyond the hind margin by about one-third of its length. The pronotum is flatter than in the ♀, and the scale is thicker and more convex vertically in front. Otherwise like the ♀.

♂ minor, 7.7-8.2 mm. Head, antennae and thorax dirty yellowish brown, the pronotum somewhat paler. Abdomen brownish, with the ochreous spots on the 1st segment elongate, confluent and very indistinctly defined. Legs ochreous, tibiae and tarsi somewhat reddish. Head nearly one and a half times longer than wide, the sides in front of the eyes straight and parallel, behind the eyes convex and convergent, the posterior margin shallowly concave and much narrower than the anterior, the posterior angles less rounded than in the ♂ media. The scapes extend by half their length beyond the hind margin. Eyes more convex than in the ♂ media. The convexity of the thorax lower than in the ♀ or ♂ media. Scale more convex in front than in the ♂ media. The projecting lobe of the clypeus is relatively wider and shorter than in the ♂ media, and its anterior margin is convex, not straight as in the ♀ and ♂ media.

♀, 14.5 mm. Length of front wing 13 mm. Colour, pubescence, pilosity and sculpture like that of the ♀, but the blackish brown colour of the thorax is more sharply delimited from the ochreous colour which extends over the whole of the sides of the thorax and the declivity of the epinotum; the pronotum ochreous at the sides. In addition, the head is paler or reddish brown at the sides and posterior angles, and the abdominal spots are wider, much more

sharply defined, the 4th segment with a small spot on each side. The scutellum and metanotum shining and almost smooth. Head one-fourth longer than wide, the posterior margin almost straight, otherwise formed like that of the ♀ media. The scapes extend beyond the hind margin by one-third of their length. The carina on the clypeus more obtuse than in the ♀ media. Ocelli small. Mesonotum a little longer than wide, with a median impressed line on its convex anterior portion. Scutellum about as wide as long, rounded posteriorly. Dorsum of the epinotum convex from side to side and lengthwise, as long as the subvertical declivity. Anterior face of the scale less convex than in the ♀. Abdomen elliptical, not quite twice as long as wide. Wings suffused with ochreous yellow, the nervures and stigma yellowish brown.

♂, 9.4 mm. Head, flagellum, petiole and thorax more or less ochreous, the head somewhat darker or reddish ochreous (raw sienna), the dorsum of the mesonotum and scutellum reddish brown, abdomen brown, the basal segment paler; femora, ochreous, scapes, tibiae and tarsi brownish yellow. Pilosity, pubescence and sculpture as in the ♀, but the abdomen is more shining, and the epinotum and petiole are entirely smooth and shining. Head, excluding the mandibles, as long as wide across the eyes, the sides in front of the eyes subparallel or slightly convergent anteriorly, the sides behind the eyes convex and forming with the posterior margin a semicircle. Eyes very large and convex, two-fifths as long as the head; ocelli fairly large. Frontal carinae parallel on the posterior half, not convergent as in the ♀. Clypeus raised towards the middle line but hardly carinate, twice as wide as long. Mandibles small, with 3 or 4 obtuse teeth. The scapes extend beyond the hind margin by half their length, all the joints of the flagellum longer than wide and becoming progressively shorter to the penultimate joint. Mesonotum as long as wide, convex in front, flat posteriorly, the parapsidal sutures distinct. Scutellum nearly half as long as the mesonotum, narrower behind than in the ♀, its sides vertical. The dorsum and declivity of the epinotum form a continuous and steep curve, their limits not clearly defined but the dorsal portion much the shorter. Scale of petiole low, seen from the side broadly conical, hardly higher than thick at the base, the dorsal edge rather thick, the anterior face subquadrate and a little wider below than above. Abdomen lanceolate. Femora compressed. Wings as in the ♀.

Common throughout S. Rhodesia and the greater part of S. Africa.

This is one of the two common ants, (*Pheidole punctulata* being the

other), to which the popular name of "Sugar-ant" has been applied. It is very largely crepuscular and nocturnal in its habits, and is often a nuisance in houses where it visits pantries, cupboards and other places where sugary substances are kept. The nest is usually placed under stones in the ground, and has the entrance surrounded by an irregular and low crater. The ♂♂ media and minor may be seen now and again at work round the entrance of the nest during the day, but the ♀♀ are very rarely seen in the open before sunset.

Up to a quite recent date, it was assumed that the type species of *maculatus* of Fabricius was the form with pale tibiae, common in Egypt. However, in a paper published a short time ago, Prof. Emery pointed out that Fabricius described his species as having black tibiae, so that the Egyptian form must be treated as a variety of the type. The latter is in the Banksian collection in the British Museum, and has recently been redescribed by Donisthorpe. I have also had the opportunity of examining the type and from the description which I wrote out at the time, it is clear that the only feature in which it differs from the Rhodesian specimens (on which the foregoing descriptions have been based), is the presence of 5 or 6 fine setae on the lower margin of the posterior tibiae. Notwithstanding the importance which some authors have attached to the absence or presence of such setae, I can not for my part regard the lack of those structures in the Rhodesian specimens as the slightest justification for separating the latter as a variety.

(S.A.M., R.M., G.A. colls.).

Race MANZER, Forel.

Ann. Soc. Ent. Belg. vol. 54, p. 452, ♀. 1910.

Rev. Zool. Afric. vol. I, p. 280, ♂ minor (?), 1911.

♀, 13-14.7 mm. Colour, sculpture and pilosity like that of *maculatus* i. sp. but the head is more castaneous red, becoming paler towards the posterior angles. The ochreous spots on the 1st and 2nd abdominal segments coalesce and form a band on each side, the spots on the 3rd segment very dark and small, or almost obsolete. Head nearly one-fifth longer than wide, the sides less convex and the posterior angles less rounded than in the type of the species. Scapes longer, extending beyond the hind margin by two fifths of their length. Mandibles longer. The anterior margin of the lobe of the clypeus more distinctly crenulate than in the type of the species. Thorax less convex lengthwise than in the type. Scale thicker, especially its dorsal edge. Tibiae setose below.

♀ minor, 10·2 mm. The yellow markings on the abdomen are very wide, so as to leave a narrow triangle of blackish brown extending over the middle of the first three segments, the remaining segments being entirely dark. The rest of the body, the legs and the antennae dark ochreous, the meso-epinotum somewhat reddish ochreous. The scapes are longer than in the type species, extending as far as the pro-mesonotal suture. Otherwise like the ♀ minor of the type species. This form of the ♀ was taken with the ♂ which are typical, so that the ♀ described by Forel doubtfully as belonging to this race is evidently something else.

Victoria Falls, (Wroughton, Arnold).

G.A. coll.

Race ATRAMENTARIUS, Forel.

(as variety) Ann. Mus. St. Petersburg, p. 12, ♀. 1904.

Ann. Soc. Ent. Belg. vol. 49, p. 180. 1905.

"Identical with the type of the species, but nearly entirely black, having only the flagellum, the bases of the legs and a narrow row of spots on the abdomen, and sometimes a part of the thorax, of a brownish dull yellow colour. A little more shining than the type of the species. It recalls the var. *melanoticus*, Em. of race *substitutus*. Passes into the type by every variety of colour. Tibiae not setose Abyssinia."

Also at Durban, (Wilms), (teste Forel, in Schultze, Reise Süd-afrika, where the author raises it to the rank of a race).

Race ATRAMENTARIUS, var. LIOCNEIS, Emery.

R. C. Acc. Sc. Bologna, p. 30, ♀. 1904-5.

(as *lactipennis*, Smith) Ann. Soc. Ent. France, p. 46, 1895.

"♀. Smaller than the type species and more slender, maximum length 10·5 mm. Head of the ♂ less large, (3·2 × 2·8 mm.), with the occipital angles more rounded; the tibiae are not setose, and measure at the most only 3 mm. Sculpture feebler, whereby the whole insect is rendered more glossy. Colour as in the type species, but the contrast between the yellow and the black is even sharper." Makapan and Pretoria; S.W. Africa (Lubbert), teste Forel, Schultze's Reise, p. 26. I have not seen this form or the race *atramentarius*. Notwithstanding the fact that in his original description Forel treated *atramentarius* as a variety "passing into the type by every variety of colour", yet in Schultze's Reise he raises it to subspecific rank

and attaches to it *liocnemis*, Em., as a variety. Quite recently Dr. Santschi has removed the latter from *atramentarius* and placed it with race *radamoides*, Forel, (see Ann. Soc. Ent. France, vol. 85, p. 293, 1917), at the same time expressing the opinion that *atramentarius* is more nearly allied to var. *Mathildae*, Forel of race *negus*, Forel. The not infrequent changes, similar to the foregoing, which have been made from time to time in respect to *maculatus* and its numerous forms, serve to show how confused our knowledge of this group still is, and also on what subtle distinctions many of the so-called races and varieties have been so rashly erected.

Race RADAMOIDES, Forel, var. DIFFUSUS, Santschi.

Grandidier, Hist. Madagasc, vol. 20, p. 213, 1891.

(variety). Ann. Soc. Ent. France, vol. 85, p. 293, ♀, 1917.

“♀ major, 13-13.6 mm. Larger than the var. *madecassa* Emery. The head of a reddish brown, has the posterior angles less reddish brown, the vertex more or less blackish. The yellow markings on the abdomen are as extensive as the black ones, their limits generally diffuse. With the exception of a dorsal triangular spot, the 1st segment in entirely yellow. Tibiae not, or only slightly brownish. Length of posterior tibiae, 3.6-3.9 mm.

♀ minor, 8 mm. Yellow, a longitudinal band on the dorsum of the abdomen which becomes less distinct as the size of the insect decreases. Matopo Hills, S. Rhodesia, (Arnold), types: Natal, (Muralt and Traegaorth). The Natal specimens are smaller and pass into the var. *liocnemis*.”

In the same paper, Dr. Santschi records the var. *madecassa* Emery (R. C. Acad. Bologna, p. 30, 1904) from Natal. It differs from *liocnemis* in having the head black instead of brown and the spots on the abdomen more distinct.

Race LACTEIPENNIS, Smith,

Cat. Hymen. D. M. VI, p. 34, ♀, ♂. 1858.

♂. This form differs from the type of the species in having the head less convex-sided and longer, one-seventh longer than wide. The dorsal profile of the thorax is also less convex and the scale of the petiole thicker, with the anterior face more convex. The thorax is darker, and the abdomen black or blackish brown above, with only the apical margins of the segments and the base of the 1st pale testaceous. Legs dark ochreous, only the tarsi brownish.

The colour of the abdomen in the ♀ like that of the ♂. The ♀ minor and the ♂ do not differ to any noteworthy extent from those of the type of the species.

Durban. I have a ♂, received from the British Museum, bearing a label in Smith's handwriting.

Race *TRAEGAORDHI*, Santschi.

Goteborgs K. Vetens. Vitterh. Handl. XV, 2, p. 38, ♂, ♀, ♀, ♂. 1914.

♂, 10.5 mm. Head black, thorax and abdomen brown, tibiae dark brown, mandibles and scapes blackish, femora and tarsi pale brown, the former becoming paler towards the base. Trochanters, coxae, petiole and flagellum ochreous. Margins of the abdominal segments translucent and testaceous; the paler spots on the 1st and 2nd segments very dark, diffuse and relatively larger than in the type of the species. Pilosity rusty red, sparse on the thorax and abdomen, slightly more abundant on the anterior third of the head. Tibiae not setose below. Head subopaque, the occipital angles slightly shining, the rest of the body shining. Sculpture as in the type of the species. Head less convex-sided and less narrowed in front than in the type, and less deeply concave behind, a trifle longer than wide. Mandibles a little more strongly punctured. The scape extends beyond the hind margin of the head by about one-fourth of its length. Thorax relatively longer and narrower than in the type, and less convex above, $L = 4 H$. The angle between the two faces of the epinotum, although considerably rounded, is more distinct than in the type, and the dorsum is about twice as long as the declivity. Scale higher than wide at the base, narrower than in the type, but more convex in front. Abdomen longer than wide and narrower than in the type. Tibiae slightly compressed.

♀ minor, 7.5–8 mm. Colour of the head, thorax and legs like that of the ♂, but the head is a little darker. Abdomen pale brown, the spots on the first 3 segments much lighter and larger than in the ♂ of this race, or in the ♀ minor of the type species. Moderately shining all over. The sides of the head behind the eyes are longer and less convex than in the type species. The scapes extend beyond the hind margin of the head by nearly half their length. Otherwise like the ♀ minor of the type.

“♀, 11–12 mm. Head as in the ♀ media, more rectangular than in the ♂, one-fifth narrower in front, fairly shining. The eyes,

which are a little more convex, occupy the whole of the 3rd fourth of the sides. Scutellum and mesonotum in front very shining. Epinotum fairly dull, finely shagreened, the dorsum as wide as the declivity. Scale high, thin, trenchant at the summit, slightly concave behind. Wings hyaline, with rusty-red nervures, the anterior wing 14 mm. long. Colour, pilosity and sculpture as in the ♀.

♂, 7.5 mm. Yellow. Three elongated spots on the mesonotum and the base of the abdominal segments brownish. Sculpture and pilosity as in the ♀. The cheeks less hirsute. Head longer than wide, rounded behind the eyes, which are very convex and occupy the whole of the middle third of the sides. The scape extends by more than half its length beyond the occiput. Clypeus strongly carinate, mandibles dull and shagreened, finely dentate. Epinotum only slightly convex from above to below, its two faces not distinctly delimited. Scale thicker than high, rounded above. Anterior wing 7 mm. long. Otherwise like the ♀." Natal, (Traegaardh, H. B. Marley). (S.A.M., R.M.G.A. colls.).

Race *TRAEGAORDHI*, var. *MUGER*, Forel. (Plate IX, fig. 154).

Bull. Soc. Vaud. Sc. Nat. vol. 50, p. 250, ♀. 1914.

"♀, 8-11 mm. The head is duller than in the type of the race, and the spots on the abdomen are darker, smaller and less distinct. The head of the ♀ minor in a little narrower behind. Otherwise identical with the type of the race."

Durban. (H. B. Marley).

Contrary to the author's statement, the head of the ♀ in all the specimens before me is just as dull as in the race, and the abdominal spots are, if anything, more distinct. The only notable difference which I can see is, that the ♀ minor has the abdominal spots clearer and paler, and widened so as to form almost complete transverse bands. The head is just as wide behind as in the race. In my opinion, the separation is not justified by such trifling differences and the varietal name should be suppressed. (S.A.M., G.A. colls.).

Race *RADAMAE*, Forel, var. *MIXTELLUS*, Forel.

Grandidier, Hist. Madagasc. p. 31 & 33, ♀. 1891.

♀, 10 mm. Head, antennae and tarsi yellowish red, thorax, petiole and legs ochreous, first three abdominal segments with wide flavous apical margins and large pale ochreous spots on each side, leaving

only a narrow median area and a narrow band in front of the apical margins pale brownish. Mandibles ferruginous, shining, sparsely but strongly punctured, their masticatory margins black; the anterior margin of the clypeus also blackish. Abdomen shining, the rest of the body subopaque. Head as long as wide behind, less narrowed in front, the posterior angles more widely rounded, the posterior margin much less concave (almost straight) than in the type of the species. Eyes placed just behind the middle of the sides. Clypeus more obtusely carinate than in the type of the species. Frontal carinae more convex externally and wider apart behind. Pronotum less convex transversely. Mesonotum a little more compressed, the dorsum of the epinotum wider and distinctly delimited from the sides, (in the type of the species the sides of the epinotum meet above in a very narrow angle, its apex rounded off, so that the actual dorsal face is rendered almost obsolete). Convexity of the thorax, $L. = 3\frac{1}{4} H$. The scale is less convex in front. The vertex of the head, behind the frontal carinae lacks the half dozen or so piligerous punctures which are present in the type species. Posterior tibiae not setose below. Otherwise like the type of the species.

Estcourt, Natal. (Wroughton, Haviland).

The description given above is based on specimens collected by Wroughton and named by Dr. Forel himself, from the B.M. and S.A.M. colls.

Race *PICTIVENTRIS*, Mayr. (Plate IX, fig. 153).

Ann. K. K. N. H. Mus. Wied, vol. 16, p. 28, ♂, ♀. 1901.

♂, 8.5–9 mm. Head, thorax, antennae and petiole dark yellowish red, the occipital lobes of the head paler, the legs dirty ochreous. The pale ochreous (stramineous) colour on the first 3 abdominal segments extends right across, leaving only a narrow preapical blackish brown band on each segment, somewhat angularly widened in the middle; the 4th segment is blackish brown, with a transversely elongate yellow spot on each side, the apical segment blackish brown. Moderately shining, the occipital lobes distinctly so. Pilosity brownish, much less abundant on the abdomen than in the type of the species. Mandibles moderately shining, sparsely and coarsely punctured. Head less emarginate behind than in the type of the species. Clypeus sharply carinate, the lobe rectangular in front. The scapes extend beyond the hind margin by one-third of their length. Frontal carinae more convex externally and wider apart than in the type. Dorsum of epinotum as long as the declivity, the latter steep and fairly

clearly delimited. Tibiae feebly compressed, not setose below. Otherwise like the ♀ type species.

♂ minor, 6.3 mm. Head a little paler than in the ♀, the blackish bands on the abdomen more diffuse; the two faces of the epinotum less clearly delimited. Otherwise like the ♀, excepting the usual differences between the castes.

Port Elizabeth, (Brauns); Kammagas, S. W. A. (Schultze).

The above description is based on cotypes presented to me by Dr. Brauns. Other specimens from Willowmore, (leg. Brauns), differ slightly from the type of the race in being a little larger, and in having the colour of the head and thorax paler and the darker abdominal bands much paler, or brownish ochreous.

(S.A.M., R.M., G.A. colls.).

Race *PICTIVENTRIS*, var. *OCTOMACULATA*, Forel.

Ann. Soc. Ent. Belg. vol. 54, p. 442, ♂, 1910.

“♀, 6-11 mm. A little larger than the type of the race. The brown colour of the abdomen darker. It is more extensive, although still more distinctly defined, and in such a way as to reduce the yellow colour to four rounded lateral spots on the first four segments and to a fairly narrow posterior band on the first three segments. The rest of the body is of a more reddish yellow and brighter. Otherwise identical; tibiae not setose.”

Natal, 3,500 ft. (Wroughton).

Some specimens from the Matroosberg, Hex River Mountains, 3,500-5,000 ft. (leg. R. W. E. Tucker) are intermediate between this variety and the race, the colour of the head and thorax being brighter than the type, the dark colour of the abdomen paler or more reddish brown, and with the yellow markings narrower, especially on the 4th segment.

(S.A.M., R.M., G.A. colls., Matroosberg form).

Race *THORACIUS*, Fab., var. *INCOMMODA*, Forel.

Bull. Soc. Vaud. Sc. Nat. vol. 50, p. 250, ♂, 1914.

♀, 14 mm. Head and scapes black, thorax ochreous below and brownish red above, petiole and first two segments of abdomen ochreous, the latter with diffuse transverse brown bands over their apical halves, the rest of the abdomen blackish, all the segments with translucent and testaceous apical margins. Flagellum and legs reddish ochreous, the metatarsi almost brown. Head and thorax

fairly dull, abdomen moderately shining. Sculpture, pilosity etc. as in the type species; posterior tibiae finely setose below. Head as wide as long, more convex-sided than in the type species, including the closed mandibles subcordate, the posterior margin much more concave and with the occipital lobes more prominent. Clypeus obtusely carinate. Frontal carinae wider apart behind than in the type species. Thorax wide, the epinotum less compressed, the dorsum and declivity of about equal length, and meeting at an angle of about 120° . Convexity of thorax greater than in the type species, $L. = 3H.$, highest at about the middle of the mesonotum. Abdomen less elongate. Otherwise like the type of the species.

♂ media, 10.5 mm. Dull ochreous, the head and antennae reddish ochreous, the abdomen like that of the ♀ but with the dark bands on the first two segments less distinct. Head quite one-third longer than wide, the sides almost straight or only very feebly convex, hardly narrower in front than behind, the posterior margin almost straight and much wider than in the type of the species. The scape extends beyond the hind margin by about two-fifths of its length. Convexity of thorax, $L. = 3H.$ Otherwise like the ♂ media of the type of the species.

♂ minor, 9.5 mm. Like the ♂ media, but the head is ochreous only. The anterior margin of the lobe of the clypeus is straight, not arcuate as in the type of the species. Frontal carinae wider apart behind. Otherwise like the ♂ minor of the type.

Hab. ? ex S. A. Mus. coll.

Race *COGNATUS*, Smith.

Cat. Hymen. B. M. VI, p. 35, ♂, 1858.

“♂ major, $5\frac{1}{2}$ lines, (ca. 12 mm.). Extremely like *maculatus*, which it may be; the antennae and head as in that species, the legs entirely ferruginous; the abdomen entirely black. In other respects the same as *maculatus*.

♂ minor. This insect differs from the small ♂ of *maculatus*; the head is of a different form, being narrowed slightly behind the eyes and is more sharply emarginate behind; the scale of the peduncle is more elongate and pointed at the apex; the abdomen entirely black and the legs red. Notwithstanding the differences pointed out, this species will probably prove to be a variety of *maculatus*. Port Natal.”

This race is unknown to me; it has been recorded from S. W. Africa, the Cape Flats and Kammagas, Little Namaland.

Race COGNATUS, var. BOERA, Forel.

Schultze, Reise Südafrika, vol. 4, p. 27, ♂. 1910.

“♂. 8-13 mm. Differs from the type of the race by the brighter and entirely rusty yellow-red or brownish yellow colour, even in the largest ♂. Scapes, tarsi and mandibles somewhat darker brown. Otherwise the shape, sculpture and pilosity agree entirely with *cognatus*.

♀, 13 mm. Entirely brownish yellow like the ♂, dealated. Little Namaland, Steinkopf and Kammagas, (Schultze); in a rotten tree-stump. The race *Ballioni*, Forel (Ann. Soc. Ent. Belg. vol. 48, p. 176, 1904, habitat, Port Elizabeth), is only a darker variety of the true *cognatus*, at the time insufficiently known to me, differing from the same in having a darker ♂ minor, and in the narrower shape, (the head of the ♂ minor being also shorter and less narrowed behind). All varieties of *cognatus* have hirsute cheeks.”

Race INTONSUS, Emery.

R. C. Acad. Sc. Bologna, p. 29, ♂, 1904-5.

“♂. Of the size of *maculatus* i. sp. (12.5 mm. long); the head of the ♂ is less wide (3.4 × 3.1 mm.), narrower apically, (greatest length of scape 2.8 mm., of posterior tibiae 3.5 mm.). In the ♂ minor the sides of the head, from the eyes to the occipital margin, are straighter than in *maculatus*. The sculpture is stronger and the integument duller all over. The sides of the head have a stronger sparse puncturation, the punctures bearing short, straight hairs. The tibiae are setose below. Colour entirely pale yellow in the ♂ minor; in the ♂ media, the abdomen is more or less brown; in the ♂ the thorax is ferruginous, the head darker, the abdomen brown or black, either without spots or with indistinct spots of a brownish yellow and darker than in *maculatus*. Cape Prov. and Transvaal.”

Race BAYNEI, n. race.

♂. 10.8 mm. Head and scapes black, flagellum reddish brown, thorax black above, brown at the sides, epinotum black above, ochreous at the sides and on the declivity; petiole, coxae and femora ochreous (of a paler colour than in the type of the species), the tibiae and tarsi dark brown. Abdomen entirely blackish brown, only the extreme apical margins flavous and translucent. Sculpture much more superficial than in the type of the species, the whole body more shining, especially the head. Pilosity brownish yellow,

much shorter and scantier than in the type of the species. In the shape of the head and the epinotum this race resembles race *radamae*, var. *mixtellus*. The head is much more convex above than in the type species. It is as wide, or a little wider than long, the sides more convex, the posterior margin less concave and the occipital lobes less prominent than in the type of the species. The posterior margin of the head is only very shallowly emarginate or almost straight. The frontal carinae more divergent behind than in *maculatus* i. sp. Clypeus flatter transversely, more obtusely carinate, the lobe less produced. Metanotum distinctly defined. Dorsum of epinotum flat transversely, feebly convex lengthwise, distinctly delimited from the sides and the declivity, its junction with the latter forming a distinct but wide angle; declivity as long as the dorsum.

Convexity of thorax, L. = $3\frac{1}{2}$ H., highest at the meso-epinotal suture. Scale less convex in front and behind than in the type of the species. Tibiae barely compressed, not setose below. Otherwise like the ♂ of the type species.

♀ media, 8.2 mm. Colour, sculpture and pilosity as in the ♂. Head about one-sixth longer than wide, the posterior angles more rounded than in the ♀ media of *maculatus* i. sp. and the posterior margin straight, not concave. Otherwise like the ♂.

♀ minor, 6.5–7 mm. Legs ochreous, tarsi slightly brownish ochreous, scapes brown, thorax brownish above on the pro-mesonotum, ochreous elsewhere. Abdomen yellowish brown. Head nearly half as long again as wide, the outline behind the eyes semicircular; in front of the eyes the sides are straight and slightly convergent anteriorly. Otherwise like the ♀ media.

Hermanus, Cape Prov. (L. Lochee-Bayne).

(S.A.M., R.M., G.A. colls; types in my collection).

Race SEXPUNCTATUS, Forel.

Mitth. Schweiz. Ent. Ges. vol. 9, p. 66, ♂, ♀. 1894.

This race, originally described as a distinct species, was subsequently reduced to a race of *maculatus* by its author, and yet later was once more re-instated in its specific rank. Santschi, going even further, proposed that it should be removed to the sub-genus *Dinomyrmex*, a view with which Forel apparently agrees, since in his recent revision of the genus, (Rev. Suisse Zool. Vol. 22, p. 268, 1914), he lists it under that sub-genus.

I have received from Dr. Forel, cotypes of the ♂, ♀ and ♀ of this form and a careful examination of these specimens convinces

me that *sexpunctatus* is no more than a race of *maculatus* and fairly closely related to race *Liengmei*. It is a significant fact that the latter was originally described by Dr. Forel as a variety of *sexpunctatus*. The hind part of the head in the ♀ minor of *sexpunctatus* is certainly more straight-sided than in *Liengmei*, but like that race, it has a distinct posterior margin, quite unlike the typical structure of *Dinomyrmer*, e. g. *longipes* Gerst. It is also only with some hesitation that I have decided to retain *Liengmei* in the subspecific rank to which it is now assigned by Forel. Apart from colour differences, there is little to distinguish the two forms, but the varieties *Hansingi* and *importunoides* appear to stand closer to *Liengmei* than to *sexpunctatus*. (This race is in fact race *probativus* of *C. compressus* F. See appendix).

♂. 16–18 mm. Black, flagellum, coxae, trochanters, basal half or more of the femora dull reddish-ochreous, petiole dark yellowish brown. Abdomen with a small, dull ochreous, subtriangular and rather diffuse spot on each side of the first three segments, placed near the basal margin and not extending as far as the middle of the segment; those on the 3rd segment very dark and almost obsolete. Sides of the head below the eyes nitidulous, abdomen moderately shining, the rest of the body dull. Sculpture like that of *maculatus* i. sp. but a little stronger, and with the sides of the head finely, but quite distinctly and sparsely punctured. Pilosity brownish red, absent from the legs, very sparse on the head.

Head as long as wide, the sides less convex than in the type species, the posterior margin not deeply emarginate, its middle third almost straight. Scapes relatively much longer than in the type species, extending beyond the hind margin by almost one-third of their length. Mesonotum more convex in all directions. Convexity of thorax $L = 3\frac{1}{2} H$. Declivity of epinotum oblique, much shorter than in the type species, two-fifths as long as the dorsum and merging gradually into the latter. Scale of petiole much more convex above in front, the lower third of the anterior, and the whole of the posterior face vertical. The scale is about as thick below as wide above. Tibiae strongly compressed, the dorsal and inner and outer faces canaliculate, the lower edge with a row of very short setae.

♀ minor, 10.5–12 mm. Head castaneous red or brown, thorax more or less ferruginous, (burnt sienna), femora reddish ochreous and becoming darker towards their apices, tibiae and tarsi reddish brown, abdomen a little paler than in the ♂, with the ochreous spots paler and larger, especially on the 1st segment. Head four-sevenths longer

than wide, wider in front than behind, the sides in front of the eyes straight and parallel, behind the eyes convergent and only feebly convex, (less convex than in the ♀ minor of the type species), the occipital margin straight and very narrow, but nevertheless distinct. Clypeus very obtusely carinate in the middle. Scale of petiole as in the ♂ but thicker. Tibiae as in the ♂ but less deeply canaliculate. Otherwise like the ♂.

♀. 18 mm. Colour, sculpture and pilosity as in the ♂, but the spots on the abdomen are obsolete or nearly so. Anterior half of the mesonotum shining. Head narrower, less convex-sided and less emarginate behind than in the ♂. Mesonotum very convex in front, longer than wide; scutellum as long as wide at the base. Dorsum of epinotum convex lengthwise, merging by a gradual curve into the vertical declivity. Scale cuneiform, higher than wide, the dorsal edge almost trenchant, the anterior face very feebly convex, the posterior face flat. Wings deeply tinged with yellowish brown, nervures brown. Otherwise like the ♂.

Delagoa Bay. (G.A. colls.).

Race IMPORTUNA, Forel.

(as var. of *sexpunctatus*) Schultze, Reise Südafrika, vol. 4, p. 27, ♂. 1910.

Sitzungsab. K. Bayer. Akad. Wiss. p. 288, ♀, ♂. 1911.

“♂. 14–16 mm. Colour like that of *C. caffer* Em., or of a pale coloured *cognatus*, but with diffuse brownish yellow lateral spots on the first three abdominal segments. Head dull, sometimes inclining to rusty-red and sometimes to brown. Thorax dull, abdomen shining. Much brighter than the typical *sexpunctatus* and with less sharply defined colour contrast than in *Liengmei*. The spots much smaller than in the latter and not so yellow. Duller than either of those forms but otherwise like them and with hirsute cheeks and setose tibiae. Scale thin. This variety looks deceptively like *caffer* Emery, but is more compressed and differs from it by the scale and cheeks.

♀ minor, 9.5 mm. This differs from *sexpunctatus*, *Liengmei* and var. *Hansingi* in having the head only moderately narrowed behind and possessing a hind margin more or less like that of *maculatus*, i. sp. The scale is also much less thick, higher than thick, (as thick as high in *Liengmei* ♀ minor). The colour is of a paler yellow; on the abdomen the segments have each a brown band behind, dilated in the middle and at the sides. . . . Legs and antennae a little shorter than in *Liengmei*; setae, sculpture and pilosity as in that race, including the hairs on the cheeks.

♀, 16-17 mm. Head trapezoidal, shorter than in *Liengmei*. The yellow abdominal spots smaller and redder than in that race. Wings somewhat darker than in *Liengmei*. Body brownish red, abdomen black and with the six spots, the base and the ventral surface reddish yellow. Otherwise like the ♂.

♂, 11 mm. Black; wings brownish. Cheeks without hairs (also the case in *Liengmei* ♂, which is however reddish). Otherwise like other races of *maculatus*. Tibiae setose."

Cape Prov. and Mozambique.

Race LIENGMEI, Forel.

Mitth. Schweiz. Ent. Ges. vol. 9, p. 67, ♀. 1894.

♀, 15-17.3 mm. Colour in general like that of *sexpunctatus*, but the femora are entirely reddish yellow and of a brighter yellow than in that race; the petiole is also reddish yellow, and the spots on the abdomen are brighter and larger, but nevertheless diffusely defined. The spots on the 1st segment are confined for their greater part to the vertical anterior face of the segment and are more or less confluent at their base. The pilosity of the abdomen is reddish yellow and more abundant all over. Head entirely dull, mandibles shining, (subopaque in *sexpunctatus*). The head is a little more convex-sided than in that race and the clypeus is more sharply carinate. The scape is shorter than in *sexpunctatus*, extending beyond the hind margin by only one-sixth of its length. The subvertical declivity of the epinotum is much longer, being as long as the dorsum; the latter is fairly straight and almost horizontal except at its rounded junction with the declivity. Scale of petiole cuneiform, much thinner than in *sexpunctatus*, very little more convex in front than behind, much higher than wide above. A very fine, yellowish and adjacent pubescence on the thorax, and some fine exserted pilose hairs on the cheeks in front of the eyes. Otherwise like that race.

♂ media, 12.5 mm. Head, thorax, petiole, flagellum and legs reddish ochreous (reddish raw sienna), the head somewhat darker at the sides, the scapes brownish and more or less ochreous at the base and apex, abdomen brownish or blackish brown, the ochreous spots much larger than in the ♀, diffusely margined, widest anteriorly and so arranged as to leave only a more or less triangular dark area in the middle of each segment; all the segments with the apical margins widely flavous and translucent. The head is less narrowed towards the base and the sides are more convex than in *sexpunctatus*, the

frontal carinae a little closer together. The clypeus is less sharply carinate than in the ♂ media of *sexpunctatus*, and the declivity of the epinotum is slightly longer and less oblique. Otherwise like *sexpunctatus*.

♀ minor. Forel says the minimum size of these is 9.5 mm. They have "a yellow thorax and only a brownish median longitudinal line on the abdomen and a brownish lateral spot".

Durban. (S.A.M., R.M., G.A. colls.).

Var. *α*.

♂. 15 mm. A little smaller than the type of the race. The head a little more convex-sided, and the petiole slightly thinner, the femora more reddish and becoming gradually darker or brownish red on the apical half. Otherwise like the type of the race.

♀ media, 11 mm. Colour much the same as in *Liengmei*, but the head is darker or brownish red, the dorsum of the thorax and the tibiae also a shade darker. The yellow spots on the first two abdominal segments are paler, more distinctly defined and longer, extending from the base almost to the apical margin of the segments. The head is more convex behind the eyes, and the latter are placed further back, at the posterior third (just behind the middle in the type of the race).

♀ minor, 8–10 mm. The colour as in the ♀ media, but the head paler or varying from brownish ochreous to rusty-reddish brown, the dark median longitudinal band on the first two abdominal segments narrower. The head behind the eyes is trapezoidal, that portion of the sides feebly convex in the larger ♂♀ (10 mm.), but straight in the smallest ♂♀. The scale of the petiole is thicker than in the ♀ media, longer below than wide above, the dorsal face rounded.

Harris, S.W.A. (R. W. E. Tucker).

(S.A.M., G.A. colls.).

Var. *β*.

(syn. *melanocnemis*, Santschi, Ann. Soc. Ent. France, vol. 79, p. 368, 1910 and vol. 84, p. 278, 1915).

♂, 15.5 mm. The size of this form is not stated in Santschi's description. My specimens have been determined as *melanocnemis* by Dr. Santschi himself. Apart from the slightly smaller size, the only other points of difference lie in the colour and slightly thinner petiole. The colour of the lower half of the thorax, the petiole and femora is of a dark reddish-ochre, darker than the colour of the femora in

the race. The femora in this variety are slightly darkened towards their apices. The spots on the abdomen are also dark reddish ochreous, but nevertheless brighter than in *Liengmei*, and quite discrete, even on the 3rd segment. The scape is a trifle shorter, only just reaching beyond the hind margin of the head. Otherwise identical with the type of the race.

Bulawayo. (G.A. coll.).

Var. γ .

(syn. race *manzer*, var. *contaminatus*, Santschi, Ann. Soc. Ent. France, vol. 85, p. 291. 1916).

♂. Like var. β differing from it only as follows:

The colour of the head is lighter, being dark brown rather than black, and showing a reddish tinge over the occipital lobes. The dark reddish brown colour on the thorax is confined to the upper surface of the pro- and mesonotum, all the rest, including the promesonotal suture being of a dark reddish ochreous. The petiole is very dark brown or black, (ochreous in var. β), and the tibiae and tarsi are ferruginous instead of black. The abdominal spots are much darker than in var. β , and less clearly defined. The two faces of the epinotum form an almost continuous curve, whereas in var. β there is a very obtuse or wide, but nevertheless appreciable angle between them. The scale is slightly more convex in front and less trenchant above. Otherwise like the ♂ of var. β .

♀ media, 11.4 mm. Like the ♀ media of *Liengmei* but smaller, the thorax entirely ochreous, although somewhat infusate above, the femora entirely bright ochreous, the head brownish ochreous. The eyes are less convex than in *Liengmei*.

♀ minor, 9.5 mm. Like the ♀ media excepting the usual differences in the shape of the head which exist between the two castes.

Matopo Hills, S. Rhodesia.

(R.M., G.A. colls.).

Var. δ .

Like var. γ in every particular except the colour. The dark colour on the head (and abdomen) is black and not brown, and the dorsum of the pro-mesonotum is also black, and unlike var. γ , this black colour extends over the mesonotum and the dorsum of the epinotum. The sides and ventral surface of the thorax, the petiole and the femora are of a much paler ochreous yellow than in var. γ , so that the contrast between the two colours is much greater. This

is more clearly noticeable on the abdomen, in which the spots on the first two segments are of a pale straw-yellow and are sharply defined. The spots are also longer, extending to the apical fourth of the segments.

The same paler coloration is shown in the ♂♂ media and minor. Otherwise this var. does not differ from var. γ .

Matopo Hills, S. Rhodesia.

(S.A.M., R.M., G.A. colls.).

Var. ϵ .

(syn. *C. Arnoldinus* Forel, Bull. Soc. Vaud. Sc. Nat. vol. 50, p. 251, 1914 and *C. maculatus*, race *melanocnemis* Forel, nec Santschi).

Some of the specimens constituting this variety have been determined by Dr. Forel as *melanocnemis* Santschi (= var. β mihi), but they differ more from that form than they do from *Liengmei* itself. In the sculpture, shape of the thorax etc. they are like *Liengmei*, but the colour differs from both that race and *melanocnemis* as follows. The legs are entirely reddish ochreous, and the abdomen is immaculate in the smaller ♂♂ as well as in the ♀. The abdomen is dark brown, becoming a shade paler towards the base and apex. The head and thorax are moderately glossy, the anterior half of the head distinctly so. The scape extends beyond the hind margin by nearly one-third of its length. The dorsum of the epinotum is one-fifth longer than the declivity, their junction being more distinctly angular than in *Liengmei*. In the ♂ minor the thorax is entirely yellowish brown, becoming paler at the sides below. In the ♀ and ♂ media, the thorax is black or brownish black above, only the declivity of the epinotum and the lower margins of the sides being paler.

I consider *C. Arnoldinus* Forel synonymous with this variety. In the specimens determined by Forel as *Arnoldinus* the tibiae are, as in the specimens just described, compressed, not cylindrical as stated in Forel's description. The ♂♂ minores of the two series are absolutely indistinguishable, and in the ♀♀ the only appreciable difference is that the mesonotum of "*Arnoldinus*" is slightly wider and less narrowed posteriorly.

Durban, nesting in rotten and moist logs of wood.

(S.A.M., R.M., G.A. colls.).

Race LIENGMEI, var. IMPORTUNOIDES, Forel. (Plate IX, fig. 152).

Bull. Soc. Vaud. Sc. Nat. vol. 50, p. 249, ♂, 1914.

♂. 16–17 mm. Head varying from brownish red (burnt sienna) all over, to reddish brown and becoming paler towards the posterior margin. Mandibles dark reddish brown. The flagellum, the thorax and petiole entirely brownish red or burnt sienna, the upper surface of the thorax a shade darker than the lower part of its sides. Tibiae, tarsi and scapes dark reddish brown. Abdomen brownish black, the apical margins of the segments pale flavous and translucent, the spots of a dark reddish ochreous, large and fairly sharply defined, those on the 3rd segment very little smaller than on the 2nd. The sculpture of the head is a little stronger than in the type of the race and distinctly more so than in the type of the species.

Head as long as wide, the posterior margin more deeply emarginate than in the type of the race, and also differing from the latter (in which the sides are continuously convex), by having the middle third of the sides straight. The mandibles are also longer than in the race, being half as long as the head. The lateral angles of the lobe of the clypeus are sharply rectangular, (much more than a right angle in the type of the race). The meso-metanotal and meta-epinotal sutures more deeply impressed than in the race. The dorsum of the epinotum is wider and less oblique, forming with the subvertical declivity a continuous curve; the declivity as long as the dorsum, (shorter in the race). Convexity of thorax, $L. = 4 H.$ Scale of petiole thinner, less convex in front, the sides moderately convex, (almost straight in the race).

♀ media, 12.2 mm. Colour as in the ♂ but a little paler. The spots on the basal half of the first abdominal segment extend right across it, (separated by a narrow median line of black in the ♂), the 3rd segment is entirely black. The head is like that of the ♀ media of the race but is widest behind the eyes and not in the middle; the posterior margin is much wider than in the type of the race, and very shallowly emarginate. The clypeus is more sharply carinate, the lobe longer and rectangular. Scale of petiole higher and less convex in front than in the race.

♀ minor, 8–9 mm. Head, thorax and legs ochreous or reddish ochreous, the antennae and tarsi reddish brown. Abdomen brownish, the pale markings dull ochreous and diffuse. Sides of the head in front of the eyes parallel, behind the eyes convergent and modera-

tely convex, the occipital margin very narrow. Scale of petiole as long as high, the anterior and posterior faces convex.

Smithwinkle Bay and Hermanus, Cape Prov., (Phillips, Lochee-Bayne) (S.A.M., R.M., G.A. colls).

Race *LIENGMEI*, var. *HANSINGI*, Forel. (Plate IX, fig. 161).

Ann. Soc. Ent. Belg. Vol. 54, p. 452, ♀, 1910.

♂, 16 mm. Head as in *Liengmei*, the sides convex and bearing a short exserted pilosity, (absent in *importunoides*). The median area of the clypeus is wider than long, (as wide as long in *importunoides*), the lobe shorter and with its anterior margin more sharply crenulate, the median carina also stronger. The mandibles are duller and shorter than in that variety. The sculpture of the head is stronger than in *importunoides*, with the anterior third of the head also sparsely and distinctly punctured. The ochreous spots on the 2nd abdominal segment wider, almost meeting in the middle at the base, the spots on the 3rd segment obsolete. Otherwise like *importunoides*.

♀ media, 12-12.8 mm. The spots on the first two abdominal segments larger than in the ♂, confluent at the base of the segments, those on the 3rd segment also large and almost meeting in the middle. The lobe of the clypeus shorter and with wider lateral angles than in *importunoides*. The sides of the head are convex from front to back, not parallel in front of the eyes as in *importunoides*.

♀ minor, 9-? mm. Head shorter than in *importunoides*, being barely two-thirds longer than wide (quite three-fourths longer in the other variety). Otherwise like the ♀ minor of *importunoides*.

♀, (hitherto undescribed) 16 mm. Colour as in the ♀ media; the head widest behind, but otherwise like that of the ♀ media. The mesonotum has a dark median and two lateral longitudinal bands of brownish colour. Declivity of epinotum vertical, longer than the dorsum. Scale of petiole with a trenchant and straight dorsal edge, feebly indented in the middle. Wings hyaline, nervures and stigma brown.

Willowmore, (Arnold); Grahamstown, (Cherry).

(S.A.M., R.M., G.A. colls.; type of ♀ in my collection).

Race *FORNASINII*, Emery.

Ann. Soc. Ent. France, Vol. 63, p. 46, ♂, 1895.

♂, 15 mm.; head 4.3 × 4.2 mm.; scape 4 mm.; posterior femur 5 mm. Closely allied to *cognatus* and *compressus*, almost as robust

as the latter, the head wider than in *cognatus*, less narrowed in front, the cheeks entirely devoid of pilose hairs. The scale is also thicker and more convex on both faces. The whole insect is dull above, the abdomen shining below, the head and thorax very closely punctured, the abdomen transversely striolate. A long, fine and decumbent pubescence on the whole body, sparse, more abundant on the abdomen; in *cognatus* and *compressus* the decumbent pubescence is just as abundant but shorter, and the punctures from which the hairs arise are less evident; in addition, there are also some long and erect hairs as in *cognatus*. The pubescence is very short and entirely decumbent on the scapes, longer and more oblique on the tibiae, which have numerous setae on the ventral margin; the tibiae are compressed, but not at all prismatic, their sides barely canaliculate in the larger examples. Delagoa Bay."

RACE KNYSNAE, n. r.

♀. 15.5-16.3 mm. Black, the flagellum, lower third of the sides of the thorax, the petiole and basal third of the femora reddish ochreous; apical margins of the abdominal segments testaceous and translucent. Head and thorax nitidulous, abdomen smooth and very shining. The sculpture of the head and thorax finer than in *maculatus* i. sp. Pilosity erect, fulvous, sparse on the head and abdomen, fairly abundant on the thorax. Pubescence decumbent, very short and sparse all over. Sides of head without exerted pilosity. Mandibles shining, coarsely punctured, the punctures larger and more abundant than in race *Liengmei* or *maculatus* i. sp. Clypeus with a few shallow punctures. Head, including the closed mandibles, like that of *Liengmei* but more triangular, the occipital lobes larger and more prominent posteriorly, the posterior margin much more concave; the head is as long as wide, and at its widest point (just behind the 2nd third) almost twice as wide as across the anterior margin of the clypeus. The latter carinate, the anterior margin of the lobe sharply crenulate. The scapes extend beyond the hind margin of the head by one-fourth of their length. Eyes placed in the middle of the sides. Frontal carinae as wide apart in the middle as they are long. Mesonotum more convex lengthwise than in *Liengmei* or *maculatus* i. sp., the metanotum indistinct. Dorsum of epinotum slightly flattened transversely, distinctly delimited from the sides, about twice as long as wide, longer than the subvertical declivity, its junction with the latter being a wide but distinct angle. Scale of petiole nearly twice as high as wide, the two faces only very slightly convex,

the dorsal edge thin and feebly emarginate in the middle. Tibiae compressed, the sides not canaliculate, feebly setose below.

Some of the ♀♀, 13 mm. long, are intermediate between the largest and the ♀ media and have the head narrower behind than in the largest ♀♀, but nevertheless still triangular.

♀ media, 12 mm. Dorsum of thorax brown, the femora ochreous over the basal two-thirds. Head oblong, a little wider behind than in front, widest behind the eyes, two-sevenths longer than wide, the sides moderately convex, the posterior margin feebly concave. Eyes placed behind the middle of the sides. Mandibles sharply punctured, the masticatory margin ferruginous. Clypeus more sharply carinate than in the ♀, but the anterior margin of the lobe barely crenulate. The two faces of the epinotum less distinctly delimited than in the ♀. Anterior face of the scale convex, the posterior face flat, the dorsal edge entire.

♀ minor, 10-11 mm. (Like the ♀ media, but with the thorax paler and the yellow colour of the femora extending almost to their apices. Head nearly half as long again as wide, the sides in front of the eyes straight and slightly convergent anteriorly, the sides behind the eyes form with the posterior margin a continuous convexity; hardly narrower in front of the eyes than behind them. Otherwise like the ♀ media.

♀, 16.5 mm. Colour and pilosity as in the ♀, a narrow transverse band at the base of the epinotum and the declivity of the same brownish ochreous. Head a little longer than wide, subquadrate, the posterior margin straight and one-fifth wider than the anterior, the sides slightly convex posteriorly, the posterior angles narrowly rounded. Mesonotum and scutellum fairly shining, the head and epinotum moderately so, the abdomen very shining as in the ♀. Scutellum convex lengthwise and transversely, a little higher than the mesonotum. Dorsum of epinotum shorter than, and merging gradually into the vertical declivity. Both faces of the scale a little more convex than in the ♀, the dorsal edge not emarginate. Deålated.

George, near Knysna Forest, Cape Prov. (Dr. H. Brauns).

This race was determined by Dr. Forel as *Fornasinii* Em., but it is quite distinct from that race in several features, e.g. the shining integument, the shape of the head, etc. It approaches race *Empe-docles* Forel, but the occipital lobes are not angular.

(S.A.M.R.M., G.A. colls.; types in my collection).

Race THALES, Forel.

Ann. Soc. Ent. Belg. Vol. 54, p. 453, ♂, ♀, ♀, ♂. 1910.

♂, 9-11 mm. Head black, thorax, abdomen, legs and flagellum reddish brown, the first two segments of the abdomen paler than the others. Shining, the abdomen more so than the rest of the body. The fundamental sculpture like than of *maculatus* i. sp. but more superficial, the head and thorax with a sparse piligerous puncturation in addition. Pilosity yellowish, sparse all over, the sides of the head without exerted hairs. Pubescence very fine, adjacent, almost absent from the body. Head as long as, or a little longer than wide, trapezoidal, not much narrowed in front, the middle half of the sides straight, the anterior and posterior fourth feebly convex, the posterior margin moderately concave. The posterior angles very narrowly rounded, subrectangular, projecting slightly backwards. Clypeus obtusely carinate. Mandibles shining, strongly punctured, 7-dentate. Scapes barely reaching beyond the occipital margin; frontal carinae divergent behind; eyes placed at about the middle of the sides. Thorax short and robust, the mesonotum a little wider than long, (longer than wide in the type of the species). The metanotum is almost or quite obsolete. The epinotum is strongly compressed from side to side, leaving a very narrow dorsum, narrower than in *maculatus* i. sp., very oblique, about twice as long as the declivity and joining the same in a curve. Scale of petiole low, not much higher than wide, the dorsal edge rather thick, the anterior face feebly convex, the posterior face flat. Tibiae feebly compressed and finely setose below.

♀ minor, 5.5-7 mm. Dark reddish brown, the anterior half of the head somewhat paler. Head quadrate, barely longer than wide, the sides and posterior margin straight, the posterior angles rounded. The scape extends beyond the occipital margin by two-fifths of its length. Scale of petiole subcuboid, with a distinct dorsal face which curves downwards in front; seen from above, the dorsal face is about one and a half times wider than long. Otherwise like the ♂.

♀, 11-11.5 mm. Like the ♂. Wings faintly tinged with rusty-red, nervures of the same colour. Thorax wider than the head. Scale wide, thick, subcuboid, having at the summit an almost flat or obtusely convex face. The scapes extend beyond the occiput by as much as their apical width.

♂, 7 mm. Head convex behind, wide. Mandibles wide. Scale

wide, its anterior and posterior faces vertical and parallel, widely and deeply emarginate at the summit so as to form two obtuse horns, whose apices are as thick as the base of the scale. Black; mandibles, flagellum and tarsi rusty-red. Wings as in the ♀. Otherwise like the ♀."

Basutoland, (Wroughton); Reddersburg, O. F. S. (Brauns).
(S.A.M., R.M., G.A. colls.).

Race EMPEDOCLES, Forel.

(as var. of *Thales*) Deutsch. Ent. Zeitsch. Beiheft, p. 224, ♂, ♀. 1913.

♂. 10-13.6 mm. Tarsi and flagellum ferruginous, the legs and scapes dark brown, all the rest black, with the apical margins of the abdominal segments narrowly testaceous. Sculpture, pilosity and pubescence as in *Thales*, but the head is more distinctly punctured in front of the eyes and below the frontal carinae, and the thorax is slightly less shining. It differs from *Thales* chiefly in the shape of the head, the concavity of the occiput being much deeper, so that the occipital lobes are more prominent posteriorly. They are strongly angular, only the extreme apex of the angle being rounded off. In the largest ♂♂ the head is a little wider than long, more quadrate than in *Thales*, the sides a little more convex. The scape is shorter than in *Thales*, not reaching the posterior margin by as much as the length of the 1st joint of the flagellum. The mandibles have 7 teeth, the basal one small, (not 6 as stated by Forel).

♀ media, 8.3 mm. Like the ♂, but with the mandibles ferruginous, the tarsi and flagellum of a brighter red than in the ♂. The head is subquadrate, very little wider behind than in front, the sides fairly convex, the posterior margin straight, the posterior angles widely rounded, not projecting backwards. The scape extends beyond the hind margin.

♀ minor, 6.7-7.3 mm. Like the ♀ media, but with the head a little narrower, or a trifle longer than wide, the posterior angles more widely rounded.

Salisbury, S. Rhodesia. (Father O'Neil). M'fongosi, Zululand, (W. E. Jones); Krantz Kloof, Natal, (W. B. Marley); Pretoria (Sir A. Theiler).

(S.A.M., R.M., G.A. colls.).

Race EMPEDOCLES, var. DIABOLUS, Forel.

(as race of *natalensis*, Smith), Bull. Soc. Vaud. Sc. Nat.,
vol. 16, p. 81, ♂, 1879.

♂. 12 mm. Like the type of the race in general, but the head is subopaque, and the posterior margin much more deeply concave, the occipital lobes acutely angular (less than 90°), projecting far beyond the apex of the emargination. The lobes are one-sixth the length of the head, and when seen direct from above, project backwards like cones to a point level with the middle of the pronotum.

♀ minor, 8 mm. Like the ♀ minor of *Empedocles* but with the head duller, not narrowed anteriorly, if anything a little wider in front than behind, the posterior margin moderately concave.

Salisbury, S. Rhodesia, (R. L. Thompson).

This form represents the extreme point of development in the degree of angularity and prominence of the occipital lobes. In *Thales* the lobes are subrectangular and only slightly projecting, more so and rectangular in *Empedocles*.

It is not without some hesitation that I have assigned these specimens from Salisbury to *diabolus* Forel, since the latter taken at Lessouto, O. F. S. was described as a race of *natalensis*. However in his recent review of the genus, Forel gives *diabolus* specific rank. The Rhodesian specimens agree very closely with Forel's description, but unfortunately he gave no information as to the length of the scapes, which in these specimens are much too short to admit of any close relationship to *natalensis*. Moreover, the latter is a dull insect, which *diabolus* certainly is not.

(G.A. coll.).

Race CONGOLENSIS, Emery.

Ann. Soc. Ent. Belg., vol. 43, p. 499, ♂, ♀, 1899.

♂. 13 mm. Piceous, almost black, the legs dark brown, the flagellum, tarsi and coxae reddish or yellowish brown. Dull, but with a slight greasy gloss, more pronounced on the abdomen than elsewhere. Pubescence scanty and very short, a little more abundant on the legs; pilosity thin, yellowish and sparse everywhere. Sculpture stronger than in *maculatus* i. sp., the sides of the head distinctly reticulate. Head very much like that of *Empedocles*, the occipital lobes similar. The scape falls short of the occipital margin by as much as the length of the 1st joint of the flagellum. Clypeus carinate, the anterior corners of its lobe rectangular. Mandibles less strongly

punctured than in *Empedocles*, slightly dull near their bases. Dorsum of epinotum one-third longer than the vertical declivity, rounded transversely but nevertheless distinct from the sides, not subcristate as in *Empedocles* and *Thales*. Scale of petiole one-third higher than the petiole is long, the anterior face moderately convex, the posterior face flat, the dorsal edge convex from side to side. Tibiae compressed and setose below.

♂ minor, 6.5–8 mm. Head one-fourth to one-third longer than wide, the sides convex, the posterior margin straight or feebly concave in the larger examples, not wider behind than in front. Legs with an oblique and longer pilosity than in the ♀. Dorsum of epinotum at least twice as long as the very oblique declivity, joining the latter in a low curve, narrower above than in the ♀, but wider than in the ♂ minor of *Empedocles*.

♀, 13 mm. Head 3.8 × 3 mm.; scape 2.5, posterior femur 3.8, tibia 3.2 mm. Relatively small, colour and sculpture as in the ♂. Head subrectangular, with rounded angles, barely a little narrower in front than behind. The scale is higher than in the ♀, its anterior face less convex, the dorsal edge straight or slightly impressed in the middle. Wings yellowish, the marginal and submarginal nervures brown, the other nervures testaceous."

Bindura, Mashonaland, (G. Coghill).

(S.A.M., G.A. colls.).

Race AGRICOLA, Forel.

Ann. Soc. Ent. Belg. vol. 54, p. 454, ♀, ♂. 1910.

♀, 5–8 mm.

♀. Mandibles as *Thales*, but shining, a little less punctured, barely or not at all reticulate. Lobe of the clypeus a little longer; frontal carinae less divergent. Eyes placed behind the middle. Sides of the head a little more convex, the head a little narrower at the occiput. Otherwise the head is like that of *Thales*, including the length of the scapes. Thorax like that of *Thales*, but with the meso-epinotal suture very distinct, and the dorsum of the epinotum hardly longer than the declivity. Scale fairly thin and high, the dorsal edge obtuse. Tibiae cylindrical, not compressed, sometimes with one bristle near the base of the internal margin. Legs short. Densely and finely reticulate-punctate and dull. Abdomen and scale finely shagreened or rugulose transversely, the scale subopaque, the abdomen shining. Legs shining and feebly rugulose. There is a fine and distinct puncturation on the abdomen, indistinct elsewhere.

Erect pilosity very sparse on the body and yellowish, absent from the tibiae and scapes, which alone have a sparse and distinct pubescence. Reddish brown; scapes brown, legs yellowish, abdomen black, the margins of the segments bright yellow.

♀ minor. Head rectangular, longer than wide, the posterior margin nearly straight or barely convex; the scapes extend beyond it by about two-fifths of their length. Otherwise like the ♂, but the thorax and head are subopaque, somewhat reticulate, the abdomen brown or partly rusty brown, the margins of the segments bright yellow."

Mountains of Natal, (Wroughton).

Race NEGUS, Forel, var. BERITSCHI, Forel.

"Very much like the variety *Schweinfurthi* Forel, but the head of the ♂ is less wide and the sides are less convex. The legs and antennae are also darker, of a deep brown, the scapes black. In addition, the pubescence is more distinct, although sparse on the abdomen and limbs. The scale is a little thicker and the erect pilosity is of a paler colour. The tibiae are also a little narrower and more cylindrical."

♂, 9.5 mm. Black, the thorax very dark brownish black, the legs dark brown, paler only at the bases and apices of the femora and tibiae. The apical margins of the abdominal segments testaceous and translucent. Dull, the abdomen with a very faint glossiness. The sculpture is similar to that of the type of the species, but the abdomen is more densely rugulose.

Head like that of the type of the species but the posterior margin less concave, the sides in front of the eyes more convergent. The dorsum of the epinotum is a trifle longer than the declivity, its junction with the latter forming a wide but fairly distinct angle, rounded at the apex. The scale is much narrower than in *maculatus*, higher than long, twice as high as wide, subacuminate above, the anterior face only very slightly convex.

♀ minor, 6.5-7.5 mm. Head longer than wide, slightly wider behind than in front, the outline behind the eyes almost semi-circular, the sides in front of the eyes straight and subparallel. Scale of petiole a little narrower and thicker, otherwise like the ♂.

George, Cape Prov. (Brauns).

(R.M., G.A. colls.).

Race NEGUS, var. MATHILDAE, Forel.

Zool. Jahrb. vol. 29, p. 266, ♂, ♀. 1910.

♂. 10.5 mm. Mandibles small, smooth, sparsely punctured, the external margin feebly convex, the apex narrow. Clypeus sharply carinate, its fairly rectangular lobe having a slightly concave anterior margin. Head as wide as long, with very convex sides, narrowed in front and behind, more strongly so in front, strongly and arcuately emarginate behind. Frontal carinae sinuate, moderately divergent. Frontal area small and triangular. Eyes flat. The scape extends beyond the hind margin by not quite twice its own apical width. Thorax narrow, feebly convex in all directions above. Declivity of the epinotum half as long as the long and narrow dorsum. Scale moderately thick, biconvex, fairly trenchant above. Tibiae rounded, feebly compressed, with a row of setae on the lower margin. Dull, head finely reticulate-punctate, thorax rugulose-reticulate. Abdomen and legs nitidulous, closely and finely rugulose transversely. The scattered puncturation is distinct only on the abdomen, and fairly fine. The brownish yellow and exerted pilosity is very sparse on the body, rather more abundant on the scale and abdomen, absent from the tibiae, scapes and cheeks. The pubescence on the scapes and tibiae more abundant, elsewhere very sparse and fine. Black. Thorax dark brown. Legs and mandibles of a brighter brown, flagellum ferruginous. Apical margins of the abdominal segments yellowish.

♀ minor, 6.5 mm. Head elongate and oval, 1.2 mm. wide and 1.8 mm. long, not narrowed into a neck behind, the convex sides merge into the wide and articular hind margin. Clypeus, mandibles etc as in the ♂, but the eyes are convex. The scape extends beyond the hind margin by about half its length. The long dorsum of the thorax very feebly convex. Scale very thick, almost wedge-shaped. Otherwise like the ♂, but the head and thorax are brown.

♀, 12.5 mm. Wings faintly tinged with brown. Head and thorax blackish brown. Tarsi and tibiae reddish like the flagellum. Head rectangular, with the angles rounded, longer than wide."

It is generally difficult to identify the winged forms of this genus when apart from their workers, but their identification is rendered all the more difficult when the description is cut down to the narrow limits of that of the ♀ given above, which is indeed well-nigh useless.

Zoutpansberg, Transvaal, (Rolle).

This form completes the list of the *maculatus* group, for our region,

C. CAFFER, Emery.

Ann. Soc. Ent. France, vol. 63, p. 47, ♀, ♂. 1895.

“♀ major. Head, thorax and petiole fuscous, base of the 2nd and following abdominal segments with a small spot on each side, flagellum and femora testaceous-ferruginous, mandibles dark ferruginous; dull, scarcely pubescent and most scantily pilose. Head emarginate and widest behind, narrowed in front, the frontal carinae close together, clypeus carinate, produced into a wide truncated lobe, mandibles 7-dentate. Dorsum of thorax nearly straight, scale of petiole thick, convex in front and behind, narrowed above; tibiae moderately compressed, the lower margin setose.

♂ minor. Testaceous, the mandibles, the base and sides of the abdomen darker, the scapes, the middle of the dorsum of the abdomen and the ventral surface of the same fuscous. Head narrowed arcuately from the anterior to the occipital margin. Scale thick, nodiform, acuminate above.

♂ maxima, 16 mm.; head 4.8 mm. long, 4 mm. wide behind, 3.7 in front; scape 4.5 mm., posterior femur 5 mm. long.

♂ minima, 9.5 mm.; head 2.3 mm. long, 4 mm. wide behind and 1.3 in front; scape 3.5, posterior femur 3.5 mm. long.

Makapan, Bechuanaland, (Simon).

In the shape of the head, this ant recalls certain species of *Camponotus* of the *dorycus* group, In the ♀ major, the head is widest right at the back, and its posterior margin is widely emarginate. In the small ♂♂ on the contrary, the greatest width is near the mouth; the head is narrowed a little as far as the eyes, more strongly so behind them as far as the occipital margin, which is narrowly emarginate and sharply angular on each side. The frontal carinae are near together, their posterior extremities hardly more divergent than the anterior. The scale of the petiole is remarkably thick, especially in the small ♂. . . . The thorax is narrow, its dorsum almost straight in the middle, passing into the declivity of the epinotum by a wide arc. The whole body is dull, and covered with a close reticulate puncturation, over which are scattered the sparse pubescent punctures, the pubescence decumbent and very short; on the head of the larger specimens the punctures are larger and pit-like, and more abundant on the mandibles. The latter dull except along the masticatory margin. A few large punctures with long hairs. On the abdomen the sculpture becomes almost transversely rugulose. . . . The legs are dull and finely reticulate, they have only

a very short and decumbent pubescence; the tibiae feebly compressed, furnished with a few setae below."

This species is also recorded by Forel from the Cape.

C. BERTOLONII, Emery.

Loc. cit., p. 51, ♂, ♀.

Mayr, Ann. K. K. N. H. Mus. Wien, vol. 16, p. 28, ♂. 1901.

"♀. Piceous, shining, mandibles, antennae and tarsi fusco-ferruginous; tibiae, coxae, femora and margins of the abdominal segments pale testaceous, very sparsely pilose and pubescent. Head in the ♀ maxima a little longer than wide, narrower in front, the clypeus and cheeks with large, oblong and piligerous punctures, frontal carinae divergent and sinuate, clypeus obtusely carinate, slightly and arcuately produced in front, mandibles short, arcuate and with 6 teeth, punctulate and sparsely punctate, dull, more elongated in the ♀ minor. The latter has fewer and smaller piligerous punctures on the cheeks and clypeus. Thorax moderately elongate, compressed behind, the dorsal profile arcuate and continuous, the declivity of the epinotum hardly shorter than the dorsum, joining the latter in an obtuse angle. Abdomen very finely rugulose transversely, the scale of the petiole thin, subplanate behind, convex in front. Scapes and tibiae without erect hairs, the tibiae not setose below.

♀ major, 7 mm. Head 1.8×1.6 ; scape 1.5; posterior femur 1.6 mm. long.

♀ minor, 5 mm. „ 1.6×1.3 ; „ 1.3; „ „ 1.3 mm. „

♀. Colour and sculpture like that of the ♀ major, but the cheeks and clypeus with fewer piligerous punctures." Capetown.

"♂, 6-6.8 mm. Shining, blackish brown, mandibles, scapes and legs brown, the flagellum, tarsi and genital armature more or less brownish yellow, the articulations of the femora and coxae more or less pale yellow or brownish yellow. The exerted pilosity is exceedingly sparse, and absent from the antennae and legs; the decumbent pubescence also very sparse but fairly abundant on the antennae. The whole body is moderately shining and very finely rugulose, the abdomen transversely so. The mandibles are more coarsely rugulose than the rest of the body, also coarsely and sparsely punctured, with 4 well developed teeth. The head is almost wider than long. Clypeus strongly carinate, the anterior margin slightly produced and arcuate. Eyes fairly large, very convex and prominent. The cheeks are hardly more than half as long as the eyes. Wings faintly tinged with ochreous, the nervures ochreous, the stigma brown. Node of petiole low and transverse."

Port Elizabeth. (Brauns).

C. BIANCONII, Emery.

Loc. cit. p. 52, ♀ major.

“♀ major. Very similar to *Bertolonii*, and like it in colour and sculpture, but larger and with the cheeks barely pilose, without elongate foveae, only with minute pubescent points, the clypeus with a few piligerous foveae, its lobe truncate and subemarginate; the scale of the petiole is reddish, higher and thinner than in *Bertolonii*, its sides convex, its dorsal edge acuminate; the femora fuscous. 9 mm. long. Head 2.8×2.8 ; scape 2.2; posterior femur 2.5. Capetown, a single specimen.

Resembles *Bertolonii* so much that it might be regarded as only a race of the same. However, the size, the absence of piligerous foveae and erect hairs on the cheeks, as well as the narrow and biconvex scale with its trenchant edge, sufficiently characterise this ant. The shape of the head and thorax is about the same as in *Bertolonii*.”

C. NATALENSIS, Smith.

Cat. Hymen. B. M., vol. 6, p. 33, ♀, ♂. 1858.

♂. 14–17 mm. Black, the apical margins of the abdominal segments narrowly testaceous and translucent, flagellum and tarsi dark reddish brown. Entirely dull, the fundamental sculpture of the head like that of *maculatus*, but somewhat coarser, the floor of the spaces between the reticulations quite dull. The sides of the head and clypeus fairly abundantly sprinkled with shallow pubescent foveae. Thorax finely and closely reticulate-punctate, abdomen and petiole finely and transversely rugulose, but much more strongly than in *maculatus* and its races. Legs and scapes slightly shining, moderately punctured. The whole body, legs and antennae clothed with a fairly abundant, long and reddish yellow pubescence, oblique on the legs and abdomen, almost decumbent elsewhere. Pilosity long, fulvous, fairly plentiful on the abdomen, pronotum and clypeus, sparse elsewhere, absent from the cheeks.

Head about one-eighth longer than wide, widest behind, the sides moderately convex, the posterior margin deeply concave, the occipital lobes rounded but fairly prominent posteriorly. Mandibles strongly punctured, moderately shining but dull near the base, armed with 6 or 7 teeth. Clypeus sharply carinate, produced in front into a rectangular lobe the margin of which is crenulate. Frontal carinae slightly raised and trenchant. Eyes placed just behind the middle of the sides. Scapes rather long, extending beyond

the hind margin by quite one-third of their length and as far as the pro-mesonotal suture. Pronotum very little wider than long in the middle. In profile, the dorsum of the thorax does not form a continuous curve, as the mesonotum is more convex and raised somewhat abruptly above the level of the hind margin of the pronotum. Metanotum very small, barely defined posteriorly. Dorsum of the epinotum oblique, rounded above from side to side, a little longer than the oblique declivity. Convexity of thorax, $L. = 3\frac{1}{2} H.$; highest at the anterior third of the mesonotum. Scale of petiole higher than long, about two-thirds higher than wide above, the anterior face moderately convex, the posterior face flat. Tibiae compressed, the sides flat, the upper and lower surfaces rounded, sparsely setose on the lower margin.

♀ media. 15.5 mm. Head one-third longer than wide, the sides nearly straight, convex and convergent only over the anterior and posterior sixths, hardly narrowed in front, the posterior margin moderately concave, the posterior angles narrowly rounded. The scape extends beyond the hind margin of the head by more than one-third of its length. Pronotum as long in the middle as wide. Dorsum of epinotum about twice as long as the declivity. Scale of petiole thicker and more convex in front than in the ♀. Pilosity a little less abundant on the abdomen. Punctuation of the head weaker. Otherwise like the ♀.

♀ minor, 9-13 mm. In the smallest of these, the head behind the eyes is almost trapezoidal, the width just behind the eyes being three times the width of the occipital margin, the latter straight. In front of the eyes the sides are parallel, the head not wider across the clypeus than across the eyes. With increase in size, the sides become correspondingly more convex, and the width greater, so that in specimens 13 mm. long, the width of the posterior margin is much more than half the width of the head just behind the eyes, but still less than the width across the clypeus. The latter is only arcuately produced in the smallest ♀♀, and the carina is almost obsolete. The convexity of the thorax is much less than in the ♀, $L. = 4\frac{1}{2} H.$ The scale of the petiole is much thicker, seen from the side subconical, the two faces equally convex. Otherwise like the ♀ media.

♀, 19 mm. Colour and sculpture of the head as in the ♀. Pilosity shorter and less abundant. The mesonotum slightly glossy. The scutellum, metanotum, petiole and abdomen moderately shining.

Clypeus more coarsely punctured than in the ♀, the mesonotum very sparsely and shallowly punctured. Head widest behind, the sides convex behind the eyes, in front of them straight and convergent anteriorly, the posterior margin almost straight, the posterior angles narrowly rounded. Scapes long, extending beyond the occipital margin by very nearly half their length. The mesonotum has a median impressed line or groove extending over the anterior convexity, and continued thence as a very faint line as far as the posterior margin. The slightly depressed area between the mesonotum and the scutellum is smooth and shining. The scutellum is fairly broad, and transverse behind. Dorsum of epinotum short, merging by a short curve into the longer and vertical declivity. Scale of petiole thin, both faces nearly flat, the dorsal edge trenchant and emarginate in the middle. Wings tinged with ochreous brown, nervures testaceous, stigma brown.

♂. This sex is unknown to me. Smith's very short description is useless and not worth quoting.

Krantz Kloof and Eshowe, Natal, (W. H. B. Marley); Durban.

Var. FULVIPES, Emery.

Ann. Soc. Ent. France, vol. 63, p. 51, 1895.

"The ♀ differs from the type of the subspecies, (i. e. *corvus* Forel), by the fulvous colour of the legs, contrasting with the dark colour of the body."

Makapan, (Simon); Zululand, (Traegaardh).

Var. POLITICEPS, Santschi.

Göteborgs K. Vetens. och Vitterh. Handl. XV, 2, p. 38. 1914.

♀ media, 9 mm. Flagellum, tibiae and tarsi ferruginous, the rest of the legs and the scapes brown. Shining, especially the head (dull posteriorly in the type and the other races). Sides of the thorax and the dorsum of the epinotum dull, otherwise like the type."

Pietermaritzburg, (Traegaardh).

In the type of the species only the mesopleura are slightly shining, the dorsum of the epinotum is dull, not shining, as one might infer from the description of this variety.

Race CORVUS, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 16, p. 79, ♀, ♂, ♂, ♂. 1879.

"♀, 5.5-12 mm. Form extremely compact, dwarfish. The head of the larger ♀ is 3.8 mm. wide × 4.5 mm. long (including the

closed mandibles) whereas the thorax is hardly 4 mm. long and at the pronotum 2·5 wide. Mandibles with 6 or 7 teeth. Clypeus carinate at least in the ♂ minor, prolonged into a lobe in front, the anterior margin of the lobe feebly emarginate in the middle. Head of the ♀ major strongly concave behind. The whole thorax arched, as in *C. herculeanus*. Scale entire, rounded at its upper margin like that of *C. sylvaticus*, but a little thicker. Legs and antennae short. Of an ebony-black colour, shining, the legs, flagellum, base of the scapes and sometimes the thorax and mandibles of a more or less reddish or yellowish brown. Apical margins of the abdominal segments narrowly yellowish. Head very finely reticulate, thorax less finely reticulate-rugulose, less shining than the rest; abdomen very finely rugulose transversely. In addition, there are some very sparse punctures on the whole body, which are deep, large and abundant on the mandibles and front of the head of the ♀ major. The mandibles are also very finely reticulate-punctate between the larger punctures. A few long hairs on the body. Pubescence almost identical with that of *C. sylvaticus*. Tibiae and scapes with a feeble decumbent pubescence.

♀, 13–14·5 mm. Like the ♂, but the clypeus not carinate. A median longitudinal impressed line on the anterior third of the mesonotum, and two lateral longitudinal lines which do not reach either the anterior or posterior margin, (as in *natalensis* i. sp.). Scale entire. Colour, sculpture and pilosity as in the ♂. Mesonotum very shining and very feebly reticulate. Wings nearly hyaline, but slightly infuscate on the anterior margin, nervures and stigma brownish yellow.

♂, 6–6·5 mm. Black, dull, except the abdomen which is slightly shining; legs, antennae, mandibles and apical margins of the abdominal segments more or less reddish brown. Wings a little darker than in the ♀. Head and thorax finely but very closely reticulate-punctate. Scale thick, nodiform. Lobe of clypeus somewhat rounded. Clypeus without a carina. There are two impressed longitudinal lines parallel with the median line on the anterior third of the mesonotum, and also lateral lines as in the ♀. Pilosity and pubescence as in the ♀."

Valdezia, Transvaal. (Berthoud); Pretoria and Makapan, (Simon).

This race is unknown to me in nature, but judging by the size, compact form and shining integument, it appears to me to bear a suspicious resemblance to the race *Empedocles* Forel. It certainly is more closely allied to that race, if not identical with it, than to *natalensis*, which is a much larger and differently shaped insect.

C. ACVAPIMENSIS, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 664, ♀, 1862.

♂, 7·7–8·2 mm. Very dark brown or blackish brown, the anterior third or less of the head sometimes more or less reddish brown, the legs and antennae pale brownish ochreous (pale burnt umber), the mandibles castaneous red. Head and thorax dull, the anterior margin of the head feebly shining, the petiole and legs moderately shining, the abdomen subopaque at the base, the apical half nitidulous. Head and thorax closely and finely reticulate-punctate, petiole and legs smooth, abdomen transversely rugulose or aciculate, and also very sparsely punctured. Pubescence yellowish, short, decumbent and very scanty. Exserted pilosity long, pointed, pale yellow, on the head present only on the clypeus and between the frontal carinae.

Head, including closed mandibles, subtriangular, the posterior angles rounded, the sides moderately convex, the occipital margin shallowly concave. Clypeus very obtusely carinate, hardly produced into a lobe in front, or only into a very short one, the anterior margin feebly concave in the middle. Mandibles moderately shining, shallowly punctured, armed with 6 or 7 teeth. Scape of antennae extending beyond the hind margin by about the length of the 1st joint of the flagellum. Eyes flat, placed behind the middle of the sides. Frontal carinae fairly far apart. Pronotum one-third wider than long, less convex than in *C. maculatus*, somewhat flattened above. Mesonotum as long as wide in front, less narrowed behind and less convex transversely than in *C. maculatus*; metanotum very short, almost linear. Dorsum of epinotum twice as long as wide, merging gradually into the sides, but nevertheless wide in comparison with *maculatus* and most of its races, also merging by a low and rounded angle into the shorter and oblique declivity; the latter is smooth and shining at the base. Convexity of thorax fairly great, $L. = 3\frac{1}{3} H.$; the dorsal profile forms a curve which is almost continuous, broken only at the junction of the two faces of the epinotum. Scale of petiole thin, twice as high as wide, higher than the petiole is long, the anterior face barely convex, the posterior face flat, the dorsal edge trenchant and moderately convex from side to side. Tibiae almost cylindrical, not setose below.

♀ minor, 5·6 mm. A little paler than the ♂, the head and thorax being more or less reddish brown. The head is a little more than one-fifth longer than wide, widest across the eyes, the sides in front of the eyes moderately convergent anteriorly, convex behind them, the posterior margin straight or feebly convex and not much wider

than the anterior margin. Eyes placed behind the middle of the sides, between the third and last fourth. Frontal carinae less sinuate than in the ♀, hardly wider apart behind than in front. Clypeus more distinctly carinate, and with a longer lobe in front than in the ♀, its angles also sharper. The scapes extend beyond the hind margin by nearly half their length. Convexity of thorax slightly greater than in the ♀, the pronotum sloping much more steeply downwards in front, and flatter above. The dorsum of the epinotum is one and three-quarter times longer than the declivity. Scale of petiole thicker but hardly more convex in front. Otherwise like the ♀.

♀, 12 mm. Head trapezoidal, widest behind, the posterior angles moderately rounded, a trifle longer than wide. Clypeus barely carinate. The anterior third of the head with a sparse and shallow puncturation in addition to the fundamental sculpture. Mesonotum, scutellum, and abdomen slightly shining. The mesonotum very finely rugulose, with a few large pit-like punctures at the base and on the sides. Scutellum almost as wide behind as in front. Dorsum of epinotum very short, merging rapidly into the vertical declivity. Scale of petiole much wider than in the ♀, the dorsal edge trenchant and emarginate in the middle. Abdomen very shallowly punctured as well as rugulose. Femora dark brown. Deälated. Otherwise like the ♀.

♂, 6.3 mm. Dark blackish brown, mandibles, the basal two-thirds of the scapes, the tarsi and the bases of the tibiae ochreous, the flagellum brownish yellow. Head, mesonotum and scutellum dull, the rest slightly shining. Pilosity and pubescence thinner and scantier than in the ♀. The outline of the head, seen from above, is semicircular behind the eyes, in front of them the sides are straight and moderately convergent anteriorly. Head as long as wide across the eyes. The latter placed in the middle, large, convex and prominent. The scapes are as long as the head (including open mandibles). Mandibles strongly pubescent, slightly shining and sparsely punctured. Clypeus with a median transverse impression a little behind the straight anterior margin; behind the impression the median area is gibbous or almost tuberculate, hardly carinate. On the very convex anterior half of the mesonotum there is a shining longitudinal line on each side of the median line, which merge together at about the middle of the mesonotum. Scale of petiole thick, moderately convex in front and behind, twice as wide as high and at least three times wider than thick, subquadrate when seen

from in front or from behind, the dorsal face thick, deeply and widely emarginate in the middle. Wings tinged with pale yellow, nervures and stigma ochreous.

Bulawayo, Bembesi and Redbank, S. Rhodesia. Not common, forming small nests in the ground.

(S.A.M., R.M., G.A. colls.).

C. NIVEOSETOSUS, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 665, ♀. 1862.

Reise der Novara, Formicid. p. 35, ♀. 1865.

♂, 8 mm. Black, antennae and tarsi ferruginous, mandibles dark castaneous red. Head and thorax dull, the cheeks and mandibles slightly shining, abdomen slightly shining and transversely rugulose. The sculpture of the head and thorax consists of an exceedingly fine and close puncturation, somewhat reticulate as well on the thorax, (the sculpture much denser than in any of the preceding species). The pubescence is very fine and short, decumbent and pale yellowish white, on the legs somewhat longer and fairly abundant, elsewhere very sparse. The erect pilosity is very distinctive of this species, consisting of thick, blunt and almost snow-white hairs. These are scarce on the head; there is a row of such hairs, short and oblique, on the anterior margin of the clypeus and on the masticatory margins of the mandibles. There is a transverse row on the posterior half of the pronotum, three or four hairs on the mesonotum, and a row on each side of the declivity and dorsum of the epinotum. The edge of the scale is similarly fringed with them, and there are about three transverse rows on each abdominal segment. They are absent from the legs and antennae. Head, including closed mandibles, more or less triangular. It is widest behind and about as long as wide, the posterior margin almost straight. The scapes extend beyond the hind margin of the head by little more than their apical width. Median area of clypeus subquadrate, convex transversely, a little longer than wide, its anterior margin feebly convex, the projecting lobe very short. Frontal area small. Eyes flat, placed at the posterior third of the sides. Mandibles with 6 or 7 teeth, slightly shining, coarsely and sparsely punctured. Head not more than half as wide again as the pronotum. The latter is twice as wide as long, not very convex transversely, with distinct but obtusely angled shoulders. Dorsum of the epinotum wide, slightly arcuate lengthwise, a little longer than the subvertical declivity, which it joins in a wide angle. The declivity, seen from the side, is feebly

concave from above to below. Convexity of thorax, $L. = 3\frac{1}{2} H.$ Scale of petiole fairly wide above, the anterior face convex, the posterior face flat, the dorsal edge fairly trenchant and convex transversely. Tibiae cylindrical, not setose below.

♂ minor, 6 mm. Head a little less than one-fourth longer than wide, the posterior angles rounded, the posterior margin slightly convex, the sides feebly so and convergent anteriorly, one and a half times wider just behind the eyes than across the anterior margin. Scapes longer than in the ♀. Disc of pronotum flatter. Dorsum of epinotum one-fourth longer than the declivity. Otherwise like the ♀.

♀, 11.2 mm. Colour, pilosity, pubescence and sculpture as in the ♀. Head like that of the ♂ minor, but a little less narrowed in front. Mesonotum a trifle longer than wide, the shoulders of the pronotum rounded and visible from above; scutellum wide. Dorsum of epinotum trapezoidal, moderately convex, more than twice as wide at the base as long in the middle, shorter than the vertical declivity. Edge of scale less convex transversely, the upper half of the anterior face slightly concave transversely. Wings tinged with pale ochreous, nervures ochreous, stigma brown. Otherwise like the ♀.

♂, 6 mm. Black. Head and mesonotum dull, finely and closely reticulate-punctate; the rest of the body moderately shining and rugulose. Pilosity dirty white, less abundant than in the ♀ or ♀, and not truncated. Head a little wider across the eyes than long, semicircular in outline behind the eyes, straight and almost parallel-sided in front of them. Clypeus slightly convex transversely, the anterior margin arcuate. Scapes barely longer than the width of the head. Eyes large and convex, occupying a little more than the middle third of the sides. Mesonotum convex in front, flat above and behind. Scutellum gibbous. The declivity of the epinotum slightly oblique, its brow more rounded. Petiole nodiform, with a long upper face which is rounded from front to back and two and half times wider than long. Wings as in the ♀.

Port Elizabeth, (Brauns); Durban, (Marley); Lehututu, Kalahari, (Schultze). (S.A.M., R.M., G.A. colls.).

Race *IRREDUX*, Forel.

Schultze, *Reise Südafrika*, vol. 4, p. 30, ♂, 1910.

♀, 8 mm. ♂ 4.5–6 mm. Differing from the type of the species as follows:

The basal half of the scape reddish ochreous, the tarsi dark brown. The sculpture sharper and more coarse on the head and thorax, and clearly so on the abdomen, which is finely striate transversely and sprinkled with wide, shallow and piligerous punctures. The pilosity is longer, much more abundant on the thorax and abdomen than in the type of the species, (the pronotum has from 13-16 hairs on each side), the tips of the hairs pointed. The pubescence is also more abundant and distinctly longer. The two faces of the epinotum are much more oblique, their junction hardly angular.

Natal, 5,500 ft, (Wroughton, Haviland).

(R.M., G.A. colls.).

C. WERTHI, Forel.

Bull. Soc. Vaud. Sc. Nat. vol. 44, p. 18, ♀ minor, 1908.

" " " " " " 50, p. 253, ♀, 1914.

Enderlein, Deutsche Südpolfahrt, vol. 10, p. 393 & 426-8, ♀, 1908.

♀, 6.5-8.2 mm. Black, tarsi dark brown. Pubescence decumbent, very short and inconspicuous, almost confined to the legs and antennae. Pilosity sparse, long, fairly pointed and not thick, of a dirty whitish colour, more abundant on the abdomen than elsewhere, and absent from the legs and antennae. Shining, sculpture of the usual type of the sub-genus, but the anterior half of the head is finely and clearly reticulate and subopaque, and the vertex sparingly and shallowly punctured. The mesonotum has 3 or 4 large piligerous punctures on each side, and there are also a few on the pronotum. Head subquadrate, a trifle longer than wide, moderately narrowed in front, the sides fairly convex, the posterior margin straight or nearly so, the posterior angles widely rounded. Clypeus very obtusely carinate, with a very short lobe, the anterior margin moderately convex. Mandibles slightly shining, strongly punctured, 6-dentate. The scapes extend beyond the hind margin by about the length of the 1st joint of the flagellum. Eyes placed just behind the middle of the sides. Frontal carinae sinuate, widely divergent behind. Pronotum flattened above, its dorsum joining the sides in a very rounded angle and forming indistinct shoulders in front, twice as wide as long. Promesonotal suture sharply defined. Mesonotum slightly tumid in front. Meso-epinotal suture ill-defined in the middle. Epinotum with a fairly distinct dorsal face, slightly flattened, oblique lengthwise, and about one-third longer than wide. It joins the declivity in a fairly distinct but wide angle; the declivity is two-thirds as long as the dorsum. Scale of petiole convex in front, flat behind, the edge convex from side to side. Tibiae cylindrical, not setose below.

♀ minor, 4.7, 5.3 mm. Head a little longer than wide, widest across the eyes, the sides in front of the eyes straight and convergent anteriorly, the sides behind the eyes together with the posterior margin semicircular. Clypeus subcarinate, the carina more distinct than in the ♂. The scapes extend beyond the hind margin by about half their length. Pronotum more clearly flattened above, so that the junction of its dorsum with the sides is almost marginate or submarginate. Dorsum of epinotum one and a half times longer than the declivity, about two and a half times longer than wide, the declivity feebly concave from above to below. Scale of petiole much thicker than in the ♂, and more obtuse above. Otherwise like the ♂.

♀, 9.4 mm. (hitherto undescribed). Piceous, the apical margins of the abdominal segments widely testaceous; coxae and femora dirty ochreous yellow, tibiae and tarsi brownish yellow, basal half of the scapes reddish yellow, flagellum brownish red, mandibles castaneous. Pilosity longer and thinner than in the ♂, and of a dark ochreous brown colour. Very shining all over, the anterior half of the head somewhat duller than the rest. Sculpture of head and abdomen as in the ♂, but the punctures on the front of the head and on the space between the frontal carinae stronger and more abundant. Thorax exceedingly finely rugulose, the mesonotum and scutellum with a very fine and sparse puncturation. Head like that of the ♂, but a little less narrowed in front, the carina on the clypeus more distinct, the anterior margin feebly concave. Mandibles striatopunctate. Mesonotum with a dull median longitudinal line extending over the anterior fourth. Scutellum rather convex transversely. Dorsum of the epinotum four and a half times wider at the base than long in middle, much shorter than the vertical declivity. Scale a little thicker above than in the ♂. Abdomen very shining, only microscopically rugulose. Deälated.

Caledon, Cape Prov. (E. Phillips); Matroosberg, Hex River Mts, (R. W. E. Tucker).

This species was first discovered in Kerguelen Island, whither it had evidently been imported from the Cape.

(S.A.M., R.M., G.A. colls.; type of ♀ in my collection).

SUB-GENUS MYRMOPHYMA, Forel.

For characters see table of subgenera.

♂. The head is quadrate or subquadrate, the sides only moderately convex or straight, the posterior margin straight and the

posterior angles more or less rectangular, at the most only very narrowly rounded. The head is not much narrower in front than behind, highest in the middle, the anterior third usually fairly steep. The scapes in our species are short, not extending beyond the hind margin of the head. The mandibles are robust, strongly convex on the outer margin. The clypeus is not carinate; anteriorly it is narrowed and produced into a lobe; its median area is large but the lateral triangular pieces are small and separated from the median area by a deep depression. The thorax is much more compact and less narrowed posteriorly than in the sub-genus *Myrmoturba*. The scale has a trenchant dorsal edge. Abdomen immaculate. The sculpture is more or less like that of *Myrmoturba*, but the anterior half of the head is usually more strongly sculptured, reticulate and sharply punctured, and duller than the rest of the head. The tibiae are not prismatic, rarely compressed.

♀ media and minor. Clypeus arcuately produced, not lobed. Eyes large and prominent. Mandibles with 5 or 6 teeth as in the ♂. In general, very similar to the ♀♀ of the sub-genus *Myrmoturba*.

♀. Head shaped like that of the ♂, and not like that of the ♀ media as in the sub-genus *Myrmoturba*. Scutellum flat, dorsum of epinotum fairly long, with a deep depression between it and the metanotum. Scale as in the ♂. Abdomen elongate and narrow, in one species sharply maculate.

♂, see *C. emarginatus* Em.

The habits of our species are almost unknown, with the exception of *C. crepusculi* Arnold.

Key to the ♂♂ of sub-gen. *Myrmophyma*, Forel.

- (2) 1. Black species, anterior margin of clypeus convex, not produced into a distinct lobe *Reevei*, Arnold.
- (1) 2. More or less yellow species, anterior margin of clypeus produced into a lobe.
- (4) 3. Anterior margin of the clypeal lobe convex, indistinctly crenulate
crepusculi, Arnold.
- (3) 4. Anterior margin of the clypeal lobe not convex,
- (6) 5. Head elongate, at least one-fourth longer than wide; clypeal lobe angularly and deeply emarginate *Havilandi*, Arnold.
- (5) 6. Head quadrate, barely longer than wide; clypeal lobe not angularly emarginate.
- (8) 7. Clypeal lobe shallowly and arcuately emarginate, the emargination bounded on each side by a blunt and slightly projecting tooth or tubercle. *emarginatus*, Emery.
- (7) 8. Clypeal lobe rapidly narrowed anteriorly, snout-like, not emarginate, but bearing 3 or 5 blunt teeth or tubercles.

- (12) 9. Clypeal lobe with 3 obtuse teeth on its anterior margin.
 (11) 10. Mandibles with 6 teeth; abdomen blackish *nasutus*, Emery.
 (10) 11. Mandibles with 5 teeth; abdomen brownish ochreous
 *nasutus*, race *subnasutus*, Arnold.
 (9) 12. Clypeal lobe with 5 obtuse teeth.
 (14) 13. Mandibles with 6 teeth *nasutus*, var. *quinquedentata*, Forel.
 (13) 14. Mandibles with 5 teeth *nasutus*, var. *pretiosa*, Arnold.

C. EMARGINATUS, Emery. (Plate IX, fig. 148).

Bull. Soc. Ent. Ital. vol. 18, p. 356, ♀, ♂. 1886.

2, 5-6.5 mm. Dark reddish ochreous, the sides of the thorax, the declivity and the pro-mesonotal suture more or less brownish; abdomen brown. Mandibles ferruginous, the masticatory margin black. Shining, the anterior half of the head a little duller than the rest.

Microscopically rugulose on the thorax and abdomen; the head a little more strongly rugulose, the anterior third especially the clypeus, reticulate, the cheeks with some scattered and shallow punctures. Pubescence decumbent and exceedingly fine and sparse on the head, more abundant on the legs and antennae, absent from the rest of the body. Pilosity yellowish, very sparse.

Head subquadrate, one-sixth longer than wide, parallel-sided, narrowed only over the anterior 8th, the posterior margin convex, the posterior angles moderately rounded; seen from the side, the head is subtruncate behind. Mandibles shining, sparsely and coarsely punctured, 5-dentate. Clypeus convex transversely but not carinate, the lobe short and arcuately emarginate, the emargination bounded on each side by a broad and truncate tooth which is wider than long. Frontal area indistinct behind. Frontal carinae widely divergent, the distance between them behind being equal to their length. Eyes large, flat, placed behind the middle and occupying one-fourth of the sides. A trace of the median ocellus is present. (Emery gives no information as to the length of the scapes, and in the only specimen before me, these have become detached). Sides and front of the pronotum steep, the dorsum of the segment convex transversely. Mesonotum a little wider than long. Metanotum fairly distinct, short. Dorsum of epinotum a little longer than wide, very slightly oblique, as long as the steep declivity, which it joins in a widely rounded angle. Scale of petiole thin, ovate, nearly flat behind, slightly convex in front. Tibiae very slightly compressed, with a few setae below.

♂ minor, 3.5–4 mm. Pilosity, pubescence and colour like that of the ♀, but the colour is a little paler, the margins of the abdominal segments translucent and flavous, legs pale straw-yellow. Sculpture exceedingly superficial, almost obsolete, the clypeus and cheeks as smooth as the rest of the head. Head not quite one-third longer than wide across the eyes, the sides in front of the eyes straight and feebly convergent anteriorly, behind the eyes convex, posterior margin also convex. Eyes convex and large, placed behind the middle, occupying one-third of the sides of the head. Clypeus subcarinate, its anterior margin arcuate. Mandibles less convex externally than in the ♀. The scapes extend beyond the hind margin by a little more than one-fourth of their length. Pronotum convex transversely, not flattened above lengthwise; mesonotum not much narrower behind than in front. Dorsum of epinotum not cristate, longer than the declivity and much longer than wide. Scale of petiole convex on both faces, thicker than in the ♀. Tibiae cylindrical, not setose below.

♀, 8.5 mm. Black or brownish black, the mandibles and anterior margin of the head dark reddish brown, the apical margins of the abdominal segments testaceous. Legs more less ochreous, antennae yellowish brown. Sculpture and pilosity as in the ♀. Head like that of the ♀, but the lobe of the clypeus is shorter, more shallowly emarginate, the tubercles less pronounced. In the single specimen before me, the mandibles have 5 teeth as in the ♀, not 6 as stated by Emery. Ocelli small. A narrow area of the pronotum is visible from above, both in front and at the sides. Mesonotum slightly convex in front only. Metanotum well defined. Dorsum of epinotum horizontal, much wider than long, merging by a short curve into the much longer and subvertical declivity. Scale a little thicker than in the ♀. Abdomen oblong, parallel-sided. Wings hyaline, nervures and stigma ochreous.

♂, 4 mm. Black, scapes and tarsi dark brown, flagellum brown. Shining, microscopically rugulose, the mesonotum also with a few small and shallow punctures. Pilosity yellowish, thin and long, sparse on the head and thorax, fairly plentiful on the abdomen. The eyes occupy the middle third of the sides of the head. Clypeus gibbous or subcarinate in the middle, its anterior margin feebly concave. Masticatory margins of the mandibles oblique and edentate. Scapes fairly long, extending beyond the hind margin by half their length; 1st joint of flagellum widened apically or pyriform. Scutellum not much higher than the dorsum of the epinotum. Scale of

petiole thick, the posterior face convex transversely, the anterior face slightly concave, the dorsal edge rounded, thick, feebly convex from side to side. Wings as in the ♀.

Cape Town. (S.A.M. coll.).

C. CREPUSCULI n. sp. (Plate IX, figs. 155, 155a).

♂, 7.2–8.5 mm. Similar to *emarginatus*, but larger and darker. Head, thorax legs and antennae dark ochreous, the head somewhat reddish ochreous with the anterior fourth or so reddish brown. Mandibles ferruginous, the masticatory margin black. Abdomen dirty ochreous, becoming increasingly darker or yellowish brown towards the apex, the apical margins of all the segments pale. Sculpture and pilosity like that of *emarginatus*. Head also like that of *emarginatus*, but a little narrower in front and the sides more convex, the posterior margin moderately concave, the posterior angles rectangular and very narrowly rounded. The clypeus is convex transversely, feebly concave lengthwise over the anterior third, produced in front into a lobe, the anterior margin of which is convex and indistinctly crenulate. Mandibles shining, very strongly punctured, less convex externally than in *emarginatus*, armed with 6 sharp teeth. The scapes fall short of the hind margin by as much as two-thirds of the length of the 1st joint of the flagellum. Pronotum more convex transversely than in *emarginatus*. Mesonotum only a trifle wider than long, the pro-mesonotal and meso-metanotal sutures well defined, the meta-epinotal suture very feeble. The metanotum is about twice as wide as long. Dorsum of epinotum very little longer than wide, convex lengthwise and transversely, joining the equally long declivity in a very wide and obtuse angle. Anterior face of the scale convex, the posterior face flat, the dorsal edge convex transversely and trenchant. Tibiae cylindrical, with a few short setae below.

♀ media. 7.5–8.2 mm. Almost as large as the ♂, but having the head more like that of the ♀ minor. It is however, slightly widened anteriorly in front of the eyes, not parallel-sided. The metanotum is as large and as well defined as in the ♂. The scale is much thicker than in the ♀ minor, the anterior face very convex. Otherwise like the ♀ minor.

♀ minor, 4.7–5 mm. Very similar to the ♀ minor of *emarginatus* but larger. Sides of the head, in front of the eyes, parallel. Clypeus subcarinate, the anterior margin slightly produced and angular

in the middle. Mandibles 6-dentate, shining, shallowly and sparsely punctured. The scapes extend beyond the hind margin by one-third of their length. Pronotum less convex than in *emarginatus*, the whole thorax narrower than in that species, the mesonotum much narrower behind than in front. Metanotum indistinct or obsolete. Dorsum of the epinotum only slightly oblique, feebly convex lengthwise, narrow, twice as long as the oblique declivity. Scale of petiole cuneiform, the posterior face flat and a little longer than the convex anterior face, the dorsal edge hardly trenchant. Colour ochreous, the thorax and abdomen brownish yellow.

♀, 9 mm. Head dark ochreous, the anterior angles, the basal half of the clypeus and the vertex more or less brown. Thorax brown, the scutellum more or less ochreous. Petiole dark ochreous, abdomen dark brown, the 1st segment with a narrow, transverse and dull ochreous streak at the middle of each side. Legs ochreous, tarsi and antennae ferruginous. Epinotum subopaque, the rest of the body fairly shining. Sculpture as in the ♂, the meso- and epinotum fairly strongly rugulose, the mesonotum also sparsely but strongly punctured. Head like that of the ♂, but as wide in front as behind, the posterior margin feebly convex. Dorsum of the thorax fairly flat, the dorsum of the epinotum very little lower than the rest. Mesonotum one-fourth longer than wide; pronotum slightly visible from above. Dorsum of epinotum two and a half times wider at the base than long, slightly convex lengthwise, the meta-epinotal suture deeply impressed. Declivity of the epinotum subvertical, one-third longer than the dorsum. Scale of petiole cuneiform, both faces flat, the dorsal edge trenchant, as high as the whole petiole is long. Abdomen oblong, the sides feebly convex. Deälated. Otherwise like the ♂.

Hillside, Bulawayo and Nyamandhlovu, S. Rhodesia. Nesting in sandy soil. The entrance to the nest is a very small hole, rarely more than 3 mm. wide, without any excavated material surrounding it, and therefore not easily seen. The colonies are small, rarely comprising more than 18 individuals. This ant is a very nimble insect, and never appears above ground during broad daylight, but forages after sunset.

(S.A.M., R.M., G.A. colls.; types in my collection).

C. HAVILANDI, n. sp.

♂, 8 mm. Head piceous, the extreme posterior angles ochreous. Thorax reddish ochreous, abdomen ochreous and becoming darker or

ferruginous brown towards the apex, or sometimes ferruginous brown all over. Legs dark ochreous, antennae reddish ochreous. A few short yellowish pilose hairs on the clypeus, anterior corners of the head, thorax, petiole and abdomen, but scanty everywhere. Legs and antennae with a yellowish, sparse and short pubescence. Legs, thorax and abdomen moderately shining, very finely and transversely rugulose. Vertex and occipital third of the head reticulate-rugulose, the rest of the head densely and rather sharply reticulate-punctate and subopaque. The clypeus and upper part of the occiput with a few elongate and shallow punctures. Head oblong, one-fourth longer than wide, the sides subparallel, converging only very slightly in front, the posterior margin straight or nearly so, the posterior angles rectangular and narrowly rounded. The head is subtruncate behind, Frontal carinae sinuate, widely divergent, as wide apart at the posterior fourth as they are long; a well defined frontal sulcus reaches back as far as the posterior ends of the carinae. Eyes placed behind the middle, fairly large, hardly convex. The scapes fall short of the hind margin by as much as their apical width. Mandibles short, strongly convex externally, subopaque, finely striate on the basal, and coarsely striato-punctate on the apical half, armed with 5 broad and blunt teeth. Median area of clypeus subcarinate, longer than wide, the lobe narrowed towards the extremity, deeply and subangularly emarginate, the emargination at least half as deep as it is wide, the edge of the emargination slightly raised all round. The lateral pieces of the clypeus small and indistinct. Thorax not unlike that of *crepusculi*, but the pronotum is only slightly convex lengthwise, somewhat flattened transversely, the sides almost vertical but nevertheless merging gradually into the upper face. The meta-notum is distinct, the meta-epinotal suture more deeply impressed than the other suture. Scale not much wider above than below, flat behind, moderately convex in front, higher than the whole petiole is long. Posterior tibiae cylindrical, not setose below.

♀ media, 7 mm. Head ferruginous, darkest behind. Mandibles bright ferruginous, the masticatory margin black, with 6 teeth which are more acute than in the ♂. Thorax, petiole, legs, antennae and the basal half or thereabouts of the abdomen bright ochreous, the apical half of the abdomen and the antennae yellowish brown. Sculpture of the head like that of the ♂ but more superficial. The head is more narrowed in front than in the ♂ and the sides are moderately convex. The clypeus is only arcuately and shallowly emarginate. Scapes longer, extending beyond the hind margin by one-fourth of their length. Dorsum of epinotum longer, twice as

long as the declivity. Scale thicker, its dorsal edge obtuse, the posterior face slightly convex. Otherwise like the ♂.

♀ minor, 4.8-5.8 mm. Ochreous, the posterior half of the head and the meso-epinotum somewhat darker. Very similar to the ♀ minor of *emarginatus*, but larger and differing from it and from *crepusculi* in the pronotum which is distinctly flattened above. The scale of the petiole is inclined forwards and has a thick dorsal face which is two and a half times wider than long. The anterior face merges gradually into the dorsal face and is very convex, the posterior face flat and longer than the anterior. Otherwise like the ♀ media.

Slievyre, Natal. (Haviland), ex. Natal Museum coll.

This species is easily recognised in the ♂ caste by the shape of the head, the clypeus and the strongly contrasted colours of the head and thorax.

(R.M., G.A., colls.; types in my collection).

C. NASUTUS, Emery.

Ann. Soc. Ent. France, vol. 63, p. 53, ♂, ♀(?), 1895.

"♂. Sordid testaceous, anterior margin of head dark ferruginous, abdomen, except the base and the apical margins of the segments, blackish; dull, abdomen nitidulous. Pilosity and pubescence very scanty, the latter short. Head truncate behind, very little narrower in front than behind, frontal carinae distant, sinuate, the clypeus convex transversely, barely carinate, produced in front into a narrow porrect lobe which is tridentate at the apex. Mandibles convex, sex-dentate. Thorax robust, the pronotum obtusely marginate, the meta-epinotal suture defined, the dorsum of the epinotum merging arcuately into the declivity. Scale moderately compressed, obtusely truncate above, its edge not trenchant. Tibiae feebly compressed, setose below.

9 mm. long; head, as far as apex of clypeus, 2.8 mm. long, 2.3 mm. wide; scape 1.9 mm.; posterior femur 2.6 mm. maximum width of thorax 1.7 mm.

Pretoria, one specimen, (Simon).

This species is remarkable chiefly on account of the clypeus, strongly arched transversely, the lobe of which, narrow and produced, forms a sort of beak, truncate and ending in 3 teeth, which are almost as strong as those of the mandibles. The depressions between the median and lateral pieces of the clypeus are very deep, and the lateral pieces project forwards.... The sculpture is like that which is seen in many dull forms of *C. maculatus*; a fundamental reticulate-

puncturation, on which stronger and pubescent punctures are superimposed. . . . I attribute with some doubt to this species two ♀ minima from Kimberley, in spite of considerable differences in the sculpture and shape.

♀, 4.5–5 mm. Head parallel-sided, not much longer than wide, rounded behind, with large eyes placed far backwards. Clypeus emarginate on each side, feebly produced and truncate in the middle, very obtusely carinate, fringed with a few hairs. Pronotum not marginate, rounded in front; the thorax is fairly robust in front and is narrowed behind as far as the meso-epinotal suture; the epinotum is parallel-sided, somewhat flattened above; the dorsal profile of the thorax forms a continuous arc, but with the angle of the epinotum very obtuse. Scale thicker than in the ♂, but of the same shape. Head and thorax shining, very finely and superficially punctulate, with some scattered pubescent punctures, but with very few long hairs. Pubescence and setae on the tibiae as in the ♂. The scape extends beyond the posterior margin of the eye by half its length. Colour pale testaceous, the head and middle of the abdominal segments darker."

Var. QUINQUEDENTATA, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 451, ♂, ♀. 1910.

"♂. The lobe of the clypeus has 5 teeth, owing to each of the lateral teeth being divided into two. Otherwise agrees well with the description of the type species, but the scale is acuminate.

♀ minor, 7 mm. The 5 teeth of the clypeus smaller but distinct. Scale acuminate. Eyes very large, a little longer than their distance from the occipital margin. Entirely yellow; abdomen somewhat brownish yellow. Metanotum not defined. Mandibles 5-dentate, (6-dentate in the ♂). Natal, (Haviland).

Var. PRETIOSA, n. v.

♂, 10 mm. Head and thorax yellowish brown-red, (pale burnt sienna), the anterior corners, the clypeus and the vertex (excepting the anterior half of the space between the frontal carinae), brown or piceous, the posterior half and the sides of the thorax and the petiole darker or reddish brown; abdomen piceous, the apical margins of the segments widely testaceous. Legs ochreous, tarsi and antennae ferruginous. Mandibles very shining all over, with 5 teeth, fairly abundantly punctured, the punctures small but deep. Lobe of the

clypeus with 5 teeth as in var. *quinquedentata*. Otherwise like the type of the species.

In addition, the following features should be noted. The pronotum is very little wider in front than behind, two and a half times wider than long, with subangular shoulders. The mesonotum is twice as wide in front as behind; all the thoracic sutures well defined. The metanotum is three times wider than long, but it is also much longer and clearly defined than in the other species of the sub-genus. Scale barely truncate above, the dorsal edge only feebly convex in the middle. The posterior metatarsi are furnished with two rows of lanceolate or subspatulate hairs, as in *C. belligerum mystaceus*, etc.

♀, 10.6 mm. Colour of the head like that of the ♂, but paler and of a more ochreous tint, the lobe of the clypeus ferruginous. Thorax, petiole, coxae, femora and tibiae reddish ochreous; a brown, longitudinal band on each side of the mesonotum, tarsi and antennae ferruginous. Abdomen ochreous at the base and on the ventral surface, piceous above, with a large, sharply defined and bright ochreous spot on each side of the 2nd, 3rd and 4th segments.

Head quadrate, and excluding the projecting lobe of the clypeus as long as wide, parallel-sided, the posterior margin strongly convex, the posterior angles acute and rectangular. Teeth on the lobe of the clypeus less distinct than in the ♂. Mandibles with 5 teeth as in the ♂. Mesonotum very shining in front, less so behind, sparsely but clearly punctured at the sides. Epinotum closely and finely reticulate and dull. Posterior metatarsi as in the ♂. Otherwise like the ♂.

Hillside, Bulawayo. I ♂, I ♀. Types in my collection.

Race SUBNASUTUS n. r.

♂, ca. 11 mm. (The single specimen has had the abdomen distended by the action of the fluid in which it was preserved, and measures actually 12.5 mm.). Ochreous, the anterior angles of the head brownish, the median area of the clypeus reddish ochreous and brownish at the margins; mandibles bright castaneous red, the teeth black abdomen brownish yellow. The lobe of the clypeus is shorter than in var. *pretiosa*, its sides oblique; the median area of the clypeus is also shorter and wider, or one-third wider than long, (including the lobe), whereas in *pretiosa* it is as wide as long. The mandibles are very smooth and shining, sparsely but coarsely punctured, 5-dentate. The scale of the petiole is a little narrower above. Otherwise like *pretiosa*, including the posterior metatarsi.

♀ minor, 7 mm. Head nearly one-third longer than wide, semi-circular behind the eyes, parallel-sided in front of them. The eyes occupy a little more than one-quarter of the sides, and are placed just behind the middle. Clypeus arcuate in front, not lobed, carinate. The scapes extend beyond the hind margin of the head by half their length, and reach the pro-mesonotal suture. Mandibles triangular, the basal margin nearly as long as the masticatory, 5-dentate, moderately shining, sparsely and finely punctured. Dorsum of the epinotum about one and a half times longer than the declivity, and merging gradually into the same. Scale of petiole cuneiform, both faces feebly convex, the anterior shorter than the posterior, the dorsal edge trenchant. Sculpture of the head feeble. Otherwise like the ♂.

Natal, 3,500 ft. (Haviland). ex Natal Museum coll.

Types in my collection.

C. REEVEI, n. sp.

♀ major, 6.62 mm. Black, tarsi dark brown, mandibles dark reddish brown. A very sparse, yellowish and erect pilosity on the

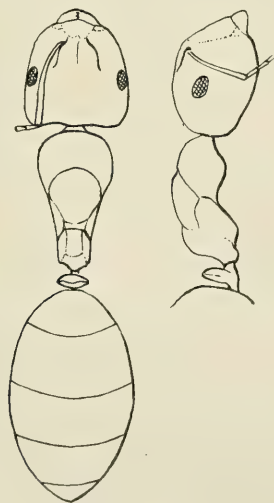


FIG. 58.—*C. reevei*, n. sp.

body; pubescence very sparse, present only on the legs and antennae. Slightly shining, the anterior four-fifths of the head dull. Microscopically and transversely rugulose, the anterior half of the head very finely and superficially reticulate, somewhat more strongly

so on the clypeus which, like the cheeks, has a few large and very shallow punctures. Mandibles 6-dentate, dull, rugulose, with a few strong punctures.

Head about as long as wide behind, subquadrate or only slightly narrowed in front, the posterior margin almost transverse, the sides and posterior angles moderately convex. Clypeus not carinate, very slightly convex transversely, the median area a little wider than long, its anterior margin feebly arcuate. Frontal carinae divergent, wider apart behind than they are long. Eyes feebly convex, placed at about the middle of the sides. The scapes just extend back as far as the occipital margin. Pronotum not very convex above, the shoulder rounded, the sides fairly steep but not marginate laterally, wider than long. Promeso- and meso-epinotal sutures well defined. Mesonotum convex transversely, as wide in front as long, obovate, considerably narrowed posteriorly. Dorsum of epinotum convex lengthwise and transversely, slightly widened towards the apex, one and a half times longer than wide, the sides fairly steep, a little longer than the declivity, which it joins in a rounded but fairly distinct angle; declivity concave and subvertical. Scale of petiole fairly thick, the dorsal edge rounded from front to back, the anterior face feebly convex, the posterior face flat. Tibiae cylindrical.

♀ minor, 3.5-4 mm. Head subovate, widest in the middle, the margin behind the eyes semicircular, one-third longer than wide. Scapes longer than in the ♀ major, extending beyond the hind margin by one-third of their length. Pronotum relatively longer than in the ♀ major, slightly flattened above. Meso-epinotal suture shallower, dorsum of epinotum more oblique and scale of petiole relatively narrower and more obtuse above than in the ♀ major. Otherwise like the latter.

Port Elizabeth, (C. Reeve), ex. Albany Museum coll.
(S.A.M., R.M., G.A. colls.; types in my collection).

SUB-GENUS MYRMOPSAMMA, Forel.

For characters see table of sub-genera.

♂. Head usually wider than long, not much narrower in front than behind. In all forms excepting *C. cuneiscapus* Forel, which may be recognised by the angular lobe at the base of the scapes, the structure of the clypeus is distinctive. The upper third or so of the clypeus forms a shelf (more or less crescentic in outline) which slopes downwards and forwards, and the lower two-thirds, which is subvertical and concave lengthwise, meets the upper third

at an angle, (this is easily seen when the head is looked at from the side). The front edge of the shelf is fringed with a row of long bristles or ammochaetae, curving downwards and forming a sort of moustache. A similar row of bristles, curving forwards and upwards is placed behind the mouth on the ventral surface of the head. In a groove on the basal margin of the mandibles there is another fringe of such bristles, but less coarse than those on the clypeus, and the lower surface of the mandibles is also furnished with one or two rows of long and thin hairs, directed inwards. The thorax is not unlike that of the *Myrmoturba* group, but is more robust, and the epinotum is less compressed, its dorsum less cristate. Scale of petiole thick below, acuminate and trenchant above; the anterior face has its basal half vertical and the upper half oblique, so that a rounded, ill-defined angle is seen when the scale is looked at from the side.

♀ media and minor. Head longer than in the ♂, but not much longer than wide, usually a little wider in front than behind. The clypeus, ammochaetae etc. as in the ♂. Scale of petiole thicker.

♀. Head like that of the ♀ media, but equilateral.

♂. Clypeus with ammochaetae as in the ♀ and ♀. Mandibles long and narrow.

The members of this subgenus, which is confined to the S. African Region, are adapted for living in sandy localities, like the *Ocymyrmecini* which are also provided with ammochaetae.

Key to the species of the sub-genus Myrmopsamma.

- (2) 1. Scapes with an angular dilatation or lobe near the base in front; clypeus without a moustache *cuneiscapus*, Forel.
- (1) 2. Scapes simple; clypeus with a moustache.
- (6) 3. Head of the ♂ not very deeply emarginate behind, the depth of the emargination less than half the length of the eye. Colour of head and thorax not dark brownish red, abdomen not black.
- (5) 4. Head moderately emarginate behind; colour of head and thorax more or less yellowish red or red *mystaceus*, Emery.
- (4) 5. Head barely emarginate behind; colour pale ochreous
mystaceus, var. *exsanguis*, Forel.
- (3) 6. Head and thorax very dark brownish red; posterior emargination of the head in the ♂ as deep as the eye is long. *mystaceus*, var. *kamae*, Forel.

C. simulans Forel is not included in the above key, as it appears to me that only the ♀ minor of that species has been described; it differs from all the above species in having the eyes nearly half the length of the sides of the head.

G. MYSTACEUS, Emery. (Plate IX, figs. 143, 143a & b).

Bull. Soc. Ent. Ital., vol. 18, p. 356, ♀, ♂. 1886.

♀, 13.5–15 mm. Head and thorax varying from ochreous rusty-red to dark red (burnt sienna), the anterior margin of the head darker or brownish. Coxae and femora dull ochreous, the femora becoming darker towards their apices, scapes, tibiae and tarsi more or less dark brown, flagellum ferruginous. Abdomen varying from a yellowish brown becoming darker towards the apex to entirely dark reddish brown. A very short, decumbent and scanty pubescence on the tibiae, wanting elsewhere. The mesonotum and abdominal segments with a very few short and thin exserted hairs. Excepting the ammochaetae, the body is otherwise glabrous. The moustache on the clypeus extends as far as the middle of the closed mandibles. Head and thorax subopaque, abdomen shining. Head very closely reticulate-rugulose, more reticulate than in the *maculatus* group. Clypeus longitudinally rugose or rugulose on the anterior half. Thorax and abdomen microscopically and transversely rugulose.

Head, excluding the mandibles, varying from one-ninth to one-eighth wider than long, the sides fairly convex, not much narrower in front than behind, the hind margin widely and not deeply emarginate, the depth of the emargination being less than half the length of the eye, the occipital lobes moderately angular and narrowly rounded. The scape extends beyond the hind margin by about two-fifths of its length. Eyes placed at the middle of the sides. Anterior margin of the clypeus straight; the clypeus is moderately convex transversely, its upper third convex lengthwise, the lower two-thirds concave lengthwise. The pits or depressions between the median and lateral pieces of the clypeus fairly deep. Mandibles 5-dentate, the teeth large and acute, the apical tooth long, quite twice as long as the subapical; the basal half dull and finely shagreened, the apical half and the teeth shining, finely and sparsely punctured, the basal margin bordered by a deep sulcus in which is inserted a row of long hairs curving inwards towards the opposite mandible. Pronotum convex, about twice as wide as long. Pro-mesonotal suture well defined. Mesonotum subovate, a trifle longer than wide. Mesometanotal suture feeble. The metanotum hardly defined. Dorsum

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Curator of the Rhodesia Museum. Bulawayo, pp. 675-766.



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of the epinotum convex lengthwise, much longer than wide, sometimes with a feeble transverse impressed line in the middle (this line is not the meta-epinotal suture), merging gradually and arcuately into the declivity, which is shorter than the dorsum. Scale of petiole thick below, thin above, as high as the petiole is long, sharply cuneiform in profile, the dorsal edge trenchant and subacuminate, or sometimes narrowly truncate in the middle; the anterior face of the scale moderately convex, the posterior face almost flat. Tibiae compressed, quadrilateral in cross-section, with two rows of setae below. The posterior metatarsi with two dense rows of lanceolate hairs below, as in *C. crepusculi*, *C. belligerum*, etc.

♂ minor, 10.5–12 mm. The large specimens hardly constitute a distinct ♀ media class, differing from the smaller ones only in having the sides of the head slightly convex in front of the eyes as well as behind them. Colour as in the 2♂, but everywhere paler, except sometimes the abdomen, which may be as dark as in the 2♂. The head and thorax in the palest specimens are straw-yellow. The tibiae at the most only reddish brown. Clypeus and mandibles as in the 2♂, the basal sulcus on the mandibles shallower. Head a little longer than wide, widest in front, but very little wider there than behind, the sides in front of the eyes straight, convex behind them, the posterior margin feebly convex. The scapes extend beyond the hind margin by more than half their length. Eyes large, more convex than in the 2♂, placed well behind the middle of the sides. Thorax much more convex than in the 2♂, $L. = 2\frac{3}{4} H.$ (in the 2♂, $L. = 3\frac{1}{2} H.$). Scale of petiole thicker and lower, not higher than it is wide below, seen from the side, equilaterally triangular. Legs as in the 2♂.

♀, (hitherto undescribed), 14 mm. Colour as in the 2♂, but a little paler; the head, thorax, petiole, tibiae, and antennae ochreous-ferruginous, the basal half of the abdomen ferruginous, the apical half reddish brown, the femora reddish ochreous. Head quadrate, as long as wide, as wide in front as behind, the sides parallel in front of the eyes, feebly convex behind them, the posterior margin straight or feebly concave. Eyes placed just behind the middle, occupying a little less than one-third of the sides. The scapes extend beyond the hind margin by a little less than half their length. Mesonotum very finely reticulate, moderately shining, finely, shallowly and sparsely punctured. The dorsum of the epinotum merges gradually into the vertical and longer declivity. Scale of petiole like that of the ♀ minor, but higher, higher than long. Abdomen ovate. Wings hyaline, nervures and stigma testaceous.

♂, 9-10 mm. Black, moderately shining, the abdomen more shining and more feebly sculptured than the rest. Microscopically rugulose. Head semicircular behind the eyes, quadrate in front of them. Eyes very convex, prominent, placed at the middle of the sides. The scapes extend beyond the hind margin by four-sevenths of their length. Mandibles long, almost parallel-sided, feebly denticulate. Clypeus furnished with a transverse row of long ammochaetae as in the ♀, but the hairs are fewer. Petiole nodiform, the anterior face very oblique or almost dorsal in position and twice as wide as long, semicircular when seen from above. Wings as in the ♀.

The colour of this species is somewhat variable, the darker specimens having the head more deeply emarginate than the others, but otherwise not distinguishable. In Emery's description, the colour is described as "testaceous, head rufescent, mandibles, antennae, tibiae, tarsi and the abdomen above fuscous." The specimens from Sawmills, Ungusa River, agree well with this description, those from the other localities are darker.

Sawmills, Ungusa River and Hillside, Bulawayo, S. Rhodesia; Willowmore, Cape Prov. (Brauns).

I have seen only two nests of this species; both were situated under large stones, and in front of the entrance to the nest there was a large, fan-shaped and levelled mass of excavated earth, ending in a short slope all round, not crateriform as in so many species of the *Myrmoturba* group.

(S.A.M., R.M., G.A. colls.; type of ♀ in my collection).

Var. KAMAE, Forel.

Schultze, Reise Südafrika, vol. 4, p. 27, ♂ minor, 1910.

"♂ minor, 10-11 mm. Nearly black, thorax partly brownish black. Mandibles and anterior margin of the head reddish. Antennae and legs brown. Coxae, bases and apices of the femora brownish yellow. Ammochaetae on the clypeus and mandibles very long and abundant. The transverse shelf on the posterior fourth of the clypeus almost angular (i.e. at its junction with the lower part). Scale higher and less thick than in the type of the species, with a pointed, compressed and trenchant edge above. Head somewhat more elongate, narrower in front than in the type of the species, not clearly wider there than behind. Thorax somewhat more strongly arched. The dorsum of the epinotum rises from the meso-epinotal suture backwards in a sharp curve and is continued thence as far as the

brow of the declivity as a long and almost straight line. Declivity not half as long as the dorsum."

I refer to this variety some specimens taken at Choaherib, S.W.A., although they are rather lighter in colour. In both the ♂ and ♀, the head and thorax are of a very dark brownish red, only the anterior margin of the head and the posterior corners being paler. Abdomen black, the apical margins of the segments narrowly testaceous. The ♂ differs not inconsiderably from the type of the species in the shape of the head.

♂, (hitherto undescribed), 15 mm. Sides of the head more convex than in the type of the species, not narrower, or only very slightly narrower in front than behind (from apex to apex of the occipital lobes). The occipital lobes sharply angular (less than a right angle), and, when seen from above, appearing to be produced backwards, owing to the much deeper emargination of the occipital margin, the depth of the emargination being equal to the length of the eye. The scale is a little thinner above than in the type of the species.

Rooibank, Walfish Bay, (Schultze); Choaherib, S.W.A. (R. W. E. Tucker).

(S.A.M., R.M., G.A. colls.; type of ♂ in my collection).

Var. *EXSANGUIS*, Forel.

Loc. cit., p. 28, ♂, ♀, ♂.

♂. 14-15 mm. Abdomen yellowish brown (raw umber), tarsi and antennae ferruginous, mandibles castaneous red, the rest of the body ochreous, fairly pale, sometimes slightly reddish ochreous. Ammochaetae also ochreous. Head wider than in the type of the species, one-seventh wider than long, less deeply emarginate behind, much less narrowed in front. Declivity of epinotum less oblique than in the type of the species, and longer. Otherwise like the type of the species.

♀ minor, 9.5-10.5 mm. Entirely ochreous, except the apical half of the abdomen which is fuscous ochreous, and the antennae and tarsi which are ferruginous. Head slightly narrower than in the type of the species.

♀, 15.5-16.5 mm. Like the ♂, hardly more darkly coloured. Wings not quite hyaline, with a tinge of yellow, nervures brownish yellow, stigma brown. Head rectangular, with almost straight sides and fairly sharp, but by no means elongated, posterior angles. Ammochaetae stronger than in the ♂, especially on the mandibles. Thorax wider than the head. Scale, in profile, elongate cuneiform,

the dorsal edge trenchant. As in the ♂, often with traces of transverse brownish yellow bands on the abdominal segments.

♂, 9.8-10.7 mm. Black; ends of the tarsi and flagellum (excepting the brown 1st joint), yellowish red. Moustache as in the ♀ and ♂. Scale cuneiform, low, emarginate above. Wings as in the ♀. Mandibles long, narrow, the masticatory margin very oblique. Head somewhat wider than long, with a straight and wide posterior margin. The nest was in sand, with a crater, the entrance as wide as a finger; the nest labyrinth not far below the surface."

Prince of Wales Bay and Steinkopf, (Schultze); Choaherib and Ababis, S.W.A. (R. W. E. Tucker).

(S.A.M., G.A. colls.).

C. SIMULANS, Forel.

Loc. cit., p. 28, ♂.

"♀, 3.6-3.9 mm. Mandibles 5-dentate, shaped as in *mystaceus* Em., but with a feebly convex external margin; the teeth are also relatively smaller, they are shining, almost smooth or very finely shagreened. Clypeus formed exactly as in *mystaceus*, with the same transverse shelf at the upper fourth and the same ammochaetae. Head transversely rectangular, wider than long, a little wider in front than behind, the posterior margin straight. Frontal carinae short, divergent, further apart than in *mystaceus*. Eyes very large, somewhat behind the middle of the sides, and occupying almost half of the same (clearly longer than their distance from the anterior margin of the head and three times longer than their distance from the posterior margin). The scape extends beyond the hind margin by quite one-third of its length. Near its base and in front it has an obtusely angled or very wide dilatation, in the same position as in *C. cuneiscapus*, but wider and less produced. Thorax moderately and evenly convex. Dorsum of the epinotum hardly longer than the declivity (much longer in *mystaceus*). Scale not thick, not cuneiform, trenchant above, slightly inclined forwards. Tibiae entirely cylindrical, with three or four setae on the lower margin. The metatarsi also with numerous spines as in *mystaceus*. Very shining, exceedingly delicately reticulate, transversely so on the abdomen. There are a few distinct punctures on the head. With exactly the same golden reddish-brown moustache and hairs on the clypeus and mandibles as in *mystaceus*. On the rest of the body there are only a few yellowish pilose hairs. Tibiae and scapes only with a decumbent pubescence. On the body the pubes-

cence is very scattered. The cheeks without exerted hairs. Pale dirty yellow, the teeth on the mandibles reddish brown.

Two specimens of this singular species were found between the mandibles of *C. mystaceus*, var. *exsanguis*, from the nest in Prince of Wales Bay, (Schultze). In spite of the peculiar convergence in the characters of the moustache, colour etc. I cannot believe that these are dwarf examples. Such a view is negatived not only on account of the enormous difference in size, compared with even the smallest ♂♂ of *exsanguis*, but also by the shape of the head, the unusually large eyes, and the dilatation at the base of the scapes (not a trace of the latter is seen in *mystaceus*). On the other hand, a relationship with *cuneiscapus* is unmistakable, on account of the scapes.

The presence of this species in the nest of *mystaceus*, even between its mandibles, makes me strongly suspect that one is dealing with a parasitic form showing mimetic characters, which may be closely related to *cuneiscapus*. If my supposition is correct, the resemblances to *mystaceus* are due to mimetic convergence, and, on the other hand, the resemblances to *cuneiscapus* to a phylogenetic relationship."

C. CUNEISCAPUS, Forel. (Plate IX, fig. 144).

Loc. cit., p. 29, ♀.

♀ media, (2½ ?), 7.5-8.2 mm. Slightly brownish or reddish ochreous, mandibles and tarsi reddish, abdomen yellowish brown. Very finely rugulose. Moderately shining, head and thorax duller than the abdomen or nearly subopaque. Thorax without pilosity, abdomen with a few short and yellowish hairs. Anterior margin of clypeus with a thin fringe of yellowish hairs, and also one or two above near its base, but without the moustache seen in the other species of the sub-genus. Mandibles 5-dentate, strongly striato-punctate, pilose, but without the row of long hairs on the basal margin and ventral surface as in the other species.

Head subrectangular, the corners rounded, slightly wider behind than in front, a little longer than wide, the posterior margin feebly concave, the sides feebly convex. Clypeus without a sloping shelf in its upper part, the anterior margin straight and feebly crenulate. The scape has an obtusely angular lobe on its anterior margin at the extreme base (see fig., Plate IX), and extends beyond the hind margin of the head by one-third of its length. Eyes placed behind the middle of the sides. Dorsum of epinotum very oblique, twice as long as the declivity, and merging gradually into the same. Scale

cuneiform, flat behind, feebly convex in front, the dorsal edge trenchant, not acuminate in the middle. Tibiae cylindrical, with a few setae below.

♂ minor, 5.5–7.8 mm. Entirely dull ochreous, mandibles, flagellum and tarsi more or less reddish brown. Head longer than in the larger ♂♂, or one-fourth longer than wide, the sides less convex, the posterior margin feebly convex. The scapes extend beyond the hind margin by half their length. Otherwise like the ♂ media.

♀, (hitherto undescribed), 10 mm. Dark reddish ochreous, the sides of the thorax more or less brownish, abdomen yellowish brown, darker than in the ♀ media. Head like that of the ♀ minor. Lobes at the base of the scapes less prominent, more obtuse at the apex. Dorsum of the epinotum twice as wide as the base is long, joining the vertical declivity in a short curve; the declivity not quite twice as long as the dorsum. Deälated. Otherwise like the ♂.

Steinkopf, Little Namaland, (Schultze); Namsem, S.W.A. (R. W. E. Tucker); Willowmore, Cape Prov. (Dr. H. Brauns).

In view of the total absence of the moustache on the clypeus, it is doubtful whether this species should be placed in this sub-genus. However, it has been assigned to this sub-genus by Dr. Forel, and, in the absence of the 2♂ caste, it may as well be placed there as in any other sub-genus.

(S.A.M., R.M., G.A. colls.; type of ♀ in my collection).

SUB-GENUS DINOMYRMEX, Ashmead.

Canadian Entom., vol. 37, p. 384, 1905.

C. LONGIPES, Gerst. (Plate IX, figs. 142, 142a).

Monatsb. Akad. Wiss. Berlin, p. 262, ♂, 1858.

Archiv f. Naturgesch., vol. 37, p. 343, 2♂, 1870.

Forel, Voeltzkow's Reise Ostafrika, p. 91, ♂, 1907.

“2♂. These stand in about the same relationship to the small-headed ♂♂, as they do in the case of *C. maculatus*, As in *maculatus* the large-headed ♂♂ (i.e. 2♂ 2♂) have the head, as far as the base of the antennae, much more darkly coloured than in the ♂, the body is almost coal-black, the legs are at least piceous, the coxae and trochanters reddish brown. The head is not only considerably longer than in *maculatus*, but on account of the deep posterior emargination is strongly cordate; it is quite dull, closely and finely

shagreened and punctured. The clypeus is more narrowed above and more strongly carinate, and covered with numerous piligerous pits. The prothorax is narrow and pyriform, and, like the mesothorax, is much longer than wide. The structure of both these segments and also of the epinotum and scale differs but little from that of the ♂ minor."

♂ minor, 15.5–16 mm. Head 3.5–4 mm. long by 2–2.2 mm. wide, scape 5.5 mm. long, the posterior femur 6 mm. Varying from pale brown with the abdomen umber brown and the femora pale yellowish brown, to entirely dark brown or blackish brown and the coxae ochreous. The flagellum in all cases ferruginous. Sometimes the clypeus, anterior half of the thorax and the basal two-thirds of the femora are more or less ferruginous. Dull, the anterior third of the head with a slight gloss. Head very finely and closely reticulate-rugulose. Thorax, petiole and abdomen finely rugulose. Pubescence fine, yellowish, decumbent and very scanty, on the abdomen exceedingly fine. Anterior margin of the clypeus with a fringe of porrect, yellowish bristles; cheeks in front with a few short exserted hairs, abdomen with a basal and a marginal row of yellowish brown, coarse and oblique hairs on each segment; on the 1st segment the basal row is wanting. Tibiae strongly compressed or prismatic, with a very oblique row of setae below. Head from one-half to four-fifths longer than wide, parallel-sided in front of the eyes, trapezoidal behind them, the sides converging rapidly towards the articular border. Apart from the articular border, there is no hind margin. The anterior margin of the head is from two and a third to three times wider than the articular border. Mandibles triangular, 7-dentate, very finely striate and subopaque. Clypeus carinate, with a wide and very short lobe, the anterior margin of which is straight and crenulate. Flagellum and scapes very long; the tip of the flagellum extends back to the base of the 3rd abdominal segment, the scape reaches the meso-epinotal suture. Frontal carinae long and fairly close together. Thorax low, feebly convex lengthwise, narrow and long. Pronotum not very convex transversely, sloping obliquely forwards and somewhat flattened lengthwise. Mesonotum not much narrowed behind, one-third longer than wide. Metanotum obsolete. Dorsum of the epinotum rounded transversely, fairly wide, at least two and a half times longer than wide and much longer than the very short declivity which it joins in a low curve. Scale of petiole subconical, the dorsal edge not trenchant, hardly higher than long. Abdomen oblongo-ovate. Legs very long and slender.

“♂, 13 mm. Head elongate behind and trapezoidally narrowed, without forming a neck. Dull, epinotum and abdomen feebly shining. Mandibles dull. Scale barely emarginate, conical when seen from the side. Dark brownish black; anterior half of the head, epinotum, scale, abdomen, coxae, femora and flagellum reddish brown. Wings brownish.”

Mombi River, S. Rhodesia, (A. E. V. Zealley); Chirinda Forest, S. Rhodesia, (C. F. M. Swynnerton); Palm Grove, Victoria Falls.

A distinctly tropical species, living in moist, hot and shady places. It is not likely to be found south of the Limpopo except in parts of Natal and the region north of that territory, from which, however, it has not yet been recorded.

(R.M., G.A. colls.).

SUB-GENUS MYRMOSERICUS, Forel.

For characters see table of sub-genera.

2♂. In general features this caste resembles that of *Myrmoturba*. The fundamental sculpture is, however, usually stronger, less superficial, consisting of a very fine and close punctate reticulation on the head and thorax, more reticulate and less rugulose than in the sub-genus *Myrmophyma*. Head and thorax dull, abdomen less shining as a rule than in *Myrmophyma*. There is always a fairly abundant, or very abundant pubescence on the abdomen, sometimes dense, silky and hiding the sculpture. On the head and thorax the pubescence is less plentiful than on the abdomen, but always much more abundant than in *Myrmoturba*. The clypeus is usually carinate and lobed; frontal carinae less divergent than in *Myrmoturba*. Mandibles with 6 or 7 teeth.

♀ minor. Like the 2♂ in sculpture and pubescence. The head like that of the ♀ minor of the sub-genus *Myrmoturba*, but sometimes very elongate and more or less the shape of a parallelogram. A ♀ media caste is barely appreciable in our S. African species, except in *C. angusticeps* Emery.

♀. The head is shaped more or less like that of the ♀ minor, but the posterior margin is rarely convex as in that caste. Sculpture, pilosity and pubescence as in the 2♂.

♂. In general like the ♂♂ of *Myrmoturba*, but the scapes are much longer, and the scale of the petiole is always deeply emarginate above. The abdomen has a long pilosity; the pubescence is scantier than in the ♀ and ♀, never silky or so dense as to hide the chitinous integument.

The species of this sub-genus usually form very large communities in the ground, or under stones and logs of timber, etc. Unlike most of the *Myrmoturba* group, which are mainly crepuscular, these ants move about in the hottest sunshine.

Key to the species of Myrmosericus, ♀♀ and ♂♂.

- (6) 1. Entirely black. Pubescence on the abdomen not abundant, in no way hiding the sculpture and colour of the integument.
- (5) 2. ♀ more than 10 mm. long. Posterior tibiae with a dense, black and oblique pilosity; ♂ minor, head not more than one and two-thirds as long as wide.
- (4) 3. ♀, 13.2–15 mm. Cheeks without outstanding hairs; petiole reticulate; ♂ minor, head one and two-thirds as long as wide. *Petersi*, Emery.
- (3) 4. ♀, 11–12 mm. Cheeks with a few long and outstanding hairs; petiole finely sculptured, merely rugulose; ♂ minor, head barely one-third longer than wide. *Eugeniae*, Forel.
- (2) 5. ♀, 9.5 mm. long; posterior tibiae not pilose; ♂ minor, head twice as long as wide. *angusticeps*, Emery.
- (1) 6. Pubescence on the abdomen very dense, hiding the colour and sculpture; or if not, then the head is partly red.
- (12) 7. Pubescence on the 2nd and 3rd abdominal segments divergent on each side of the lateral (transverse) 3rd, the hairs inside the latter strongly undulate, more or less transverse and directed towards the middle line; the hairs outside the lateral 3rd directed obliquely outwards.
- (11) 8. Head, thorax and legs more or less bright brick-red or brownish red.
- (10) 9. ♀, Head triangular, distinctly narrower at the middle than at the posterior 6th; dorsum of epinotum concave longitudinally over its whole length; ♂ minor, epinotum as in the ♀, colour of thorax reddish brown. *Valdeziae*, Forel.
- (9) 10. ♀, Head subquadrate, as wide in the middle as at the posterior 6th; dorsum of epinotum feebly concave and on the basal half only; ♂ minor, epinotum as in the ♀, colour of thorax bright red as in the ♀. *rufoglaucus*, race *vestitus*, Smith.
- (8) 11. Head dark brown, the rest of the body black or blackish brown (colour of pubescence not included). *vestitus*, var. *pectita*, Santschi.
- (7) 12. All the pubescence of the 2nd and 3rd abdominal segments convergent towards the middle line, no lateral line from which they diverge.
- (16) 13. Pubescence of the abdomen obliquely convergent, not undulated and not transverse in direction.
- (15) 14. Pubescence of abdomen greyish golden. *rufoglaucus*, race *flavomarginatus*, Mayr.
- (14) 15. Pubescence of abdomen bronzy golden. *rufoglaucus*, var. *contraria*, Santschi.
- (13) 16. Pubescence distinctly undulate, directed transversely in at least the basal inner half of the segments.

- (18) 17. ♂, Head yellowish brick-red; ♀, anterior half of the head more or less red; pubescence of the abdomen in ♂ and ♀ not dense, not entirely hiding the sculpture and colour of the integument
cinctellus, var. *ustithorax*, Forel.
- (17) 18. Head black or brown.
- (22) 19. Junction of the dorsum and declivity of the epinotum arcuate.
- (21) 20. Large species, ♂, 9-10 mm. long; the scapes extend beyond the hind margin of the head by one-sixth of their length
rufoglaucus, race *zulu*, Emery.
- (20) 21. Smaller species, ♂, 7 mm. long; pubescence of the abdomen brilliant golden *rufoglaucus*, race *cosmicus*, Smith.
- (19) 22. Junction of the two faces of the epinotum obtusely angular
rufoglaucus, race *cinctellus*, Gerst.

C. PETERSI, Emery. (Plate IX, figs. 136-136d).

Ann. Soc. Ent. France, vol. 63, p. 50, ♀ minor, 1895.

♂, (hitherto undescribed?), 13.2-15 mm. Black, dull, the legs slightly shining. Head and thorax very closely, finely and sharply reticulate-punctate, the epinotum irregularly so or shagreened, the abdomen transversely and fairly strongly rugulose. Pubescence greyish white, decumbent, fairly long and abundant on the sides of the thorax, the coxae and abdomen, shorter and much less abundant elsewhere. Erect pilosity brownish, sparse on the vertex and thorax, a little more abundant on the apical margins of the abdominal segments. Legs, especially the tibiae and tarsi, with a very dense, black and almost decumbent pilosity, composed of thick bristly hairs. Cheeks not pilose. Tibiae strongly compressed, not setose below. Head, including the closed mandibles, subtriangular, the posterior angles rounded, the posterior margin moderately concave, the sides convex, a little longer than wide (excluding the mandibles). Clypeus carinate, lobed, the lobe rectangular at the corners and straight in front; the median area of the clypeus longer than wide. Mandibles 7-dentate, fairly dull, finely reticulate, striate on the anterior third, with numerous shallow punctures. Scapes strongly flattened, extending beyond the hind margin by as much as their apical width. Eyes rather small and nearly flat, placed at the middle of the sides. Frontal area triangular, distinct. Frontal carinae sinuate, a little longer than their greatest distance apart. Thorax fairly convex transversely, almost straight longitudinally from the pro-mesonotal suture to the brow of the declivity. All the thoracic sutures well defined. Mesonotum as long as wide in front. Metanotum distinct, twice as wide as long. Dorsum of epinotum fairly broad, merging by a rapid curve into the

subvertical declivity, the two faces of equal length. Scale of petiole subnodiform, the anterior face convex from above to below, or vertical below and oblique above, the oblique area almost dorsal in position, semicircular and twice as wide as long; the posterior face vertical and almost flat. The petiole from below to the apex of the node is as high as long. Thorax highest at the brow of the declivity; convexity of thorax, $L. = 4 H.$

♂ minor, 11·5–12·5 mm. Head two-thirds longer than wide, almost parallel-sided, the sides feebly convex only behind the eyes, the posterior margin almost straight, the posterior angles narrowly rounded. Eyes more convex than in the ♀, placed a little in front of the posterior third of the sides. The scapes extend beyond the hind margin by about two-fifths of their length. Clypeus not lobed, the anterior margin convex and only slightly produced. Thorax narrower than in the ♀, the declivity less oblique and joining the dorsum in a widely rounded angle. The apical half of the dorsum strongly compressed, cristate and almost linear lengthwise. Node of petiole a little longer. There is a pale ochreous spot on each side of the head just behind the anterior angles. Otherwise like the ♀.

♀, (hitherto undescribed), 16·5 mm. Head a little less than one-third longer than wide, widest behind the eyes, the posterior margin straight and one-third wider than the anterior, the sides fairly straight, the posterior angles nearly rectangular. Sculpture of the head stronger than in the ♀, also shallowly punctured, the punctures pubescent. Clypeus very feebly carinate, the anterior margin of the lobe slightly convex. Mandibles shining, punctured as in the ♀. The scapes extend beyond the hind margin by as much as the length of the 1st joint of the flagellum. Ocelli small. Eyes convex, placed a little behind the middle. Thorax finely and very closely reticulate-punctate, dull; the metanotum smooth and shining. Scale sub-cuneiform, the two faces equally convex, the dorsal edge straight, fairly trenchant, feebly emarginate in the middle. Abdomen longer than wide. Deälated. Otherwise like the ♀.

♂, (hitherto undescribed), 10·2 mm. Black, dull. Head and thorax strongly reticulate-punctate, abdomen transversely reticulate-rugulose, much more coarsely so than in the ♀ or ♀. Head, sides and front of the mesonotum, legs and abdomen with a sparse but fairly long decumbent pubescence, wanting elsewhere. Pilosity long, absent from the mesonotum and scutellum, sparse on the head, fairly plentiful on the abdomen, very long and abundant on the sides of the epinotum and on the petiole. Head one-third longer than wide,

widest just behind the eyes, the sides in front of the eyes fairly straight and moderately convergent anteriorly; behind the eyes the head is semicircular. The posterior margin as wide as the anterior and feebly convex. Eyes not very large. The scapes extend beyond the hind margin by half their length, flattened as in the ♀. Masticatory margins of the mandibles convex, with an apical tooth only. Mesonotum vertical in front, with two median and impressed shining lines on the vertical face, the latter merges by a curve into the flat upper and posterior part. Scutellum gibbous, higher than the meso- and epinotum. The dorsum and declivity of the epinotum form a continuous curve, the declivity vertical and longer than the dorsum. Scale of petiole subconical in lateral profile, hardly longer at the base than high. Seen from above, the anterior face is oblique, concave transversely, the posterior face convex transversely, feebly so vertically, the dorsal edge widely emarginate. Wings strongly tinged with ochreous yellow, nervures brown, stigma brownish black.

Hillside, Bulawayo; Natal; Vrijburg and Pretoria, (Simon).

All the nests which I have seen have been situated under large stones, with a large heap of excavated soil surrounding the entrance in a semicircle, but not forming a distinct half-crater. A very pugnacious species.

(S.A.M., R.M., G.A. colls.; types of ♀ and ♂ in my collection).

Var. JANUS, Forel.

Sitzb. K. Bayer. Akad. Wiss., p. 288, 24, 8, 1911.

"24, 12-12.5 mm. Head almost like that of *maculatus-sanctus*, very wide behind and emarginate, narrow in front, with very convex sides. Mandibles with 7 or 8 teeth, somewhat more shining in front than in the ♀ minor and partly striate. Clypeus sharply carinate, with a rectangular lobe. Scape flattened and widened apically as in the type species. Legs, sculpture and pilosity also similar. The decumbent pubescence decidedly less plentiful, not forming a greyish bloom. Colour also black, but the two yellow spots on the cheeks entirely absent. Mandibles brownish red, the base brown."

Bothaville, O.F.S. (Dr. Brauns).

The 24 of the type of the species also lacks the yellow spots on the cheeks. The differences between the two forms appear to me to be very slight.

C. EUGENIAE, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 16, p. 78, ♀, 1879.

24, 11–12 mm. Very similar to *Petersi* but smaller, differing from it only as follows :—

Head relatively shorter and wider, more shallowly emarginate behind. Excepting a few yellowish hairs on the apical margins of the abdominal segments and on the anterior margin of the clypeus, the pilosity is entirely black, and much more abundant, especially on the clypeus, pronotum and mesonotum. The cheeks have a few exserted pilose hairs in front, in addition to the decumbent pubescence. Mandibles ferruginous. Metanotum much shorter. The scale of the petiole shorter, the anterior face less oblique in its upper half. The extreme apical margins of the abdominal segments flavous. The tibiae densely pilose as in *Petersi*. The sculpture is finer all over, and the petiole is merely rugulose or shagreened, not reticulate as in the other species.

♀ minor, 9 mm. Pilosity, pubescence and sculpture like that of the 24. It differs from the ♀ minor of *Petersi* chiefly in the shape of the head, which is much shorter in proportion to its length, barely one-third longer than wide, semicircular behind the eyes, the sides in front of the latter feebly convex and moderately convergent anteriorly. Mandibles shorter, ferruginous.

♀, (hitherto undescribed), 16 mm. Very similar to the ♀ of *Petersi*, but with the head relatively shorter and wider behind, the thorax narrower, the whole body covered with an exceedingly fine and pruinose pubescence which is most abundant on the abdomen. Sculpture of head and thorax finer. Abdomen reticulate-rugulose, not merely rugulose as in *Petersi*. Wings subhyaline, tinged with yellow only near the nervures, which are yellowish brown, the stigma pale brown.

♂, (hitherto undescribed), 8.5 mm. Black; mandibles and clypeus reddish brown, flagellum and tarsi dark brown, scape brownish ochreous. Abdomen, petiole and epinotum slightly shining, the rest dull, (entirely in *Petersi*). Like *Petersi*, but the sides of the head behind the eyes are more convex, the posterior margin narrower, not as wide as the anterior. Declivity of epinotum oblique, not clearly delimited from the dorsum. The anterior face of the petiole more oblique, almost dorsal in position, nearly as long as wide, (wider than long in *Petersi*). Wings hyaline, nervures pale ochreous, stigma brownish yellow. Otherwise like the ♂ of *Petersi*.

S. Rhodesia, fairly common. Nesting in the same sort of places as *Petersi*.

(S.A.M., R.M., G.A. colls. ; types of ♀ and ♂ in my collection).

C. ANGUSTICEPS, Emery. (Plate IX, fig. 147).

Bull. Soc. Ent. Ital., p. 355, ♀ minor, 1886.

♂, (hitherto undescribed), 9.5 mm. Black, the vertex and occiput, and the disc of the pronotum with a faint reddish brown tint, flagellum, tarsi and apices of the femora reddish brown, scapes and mandibles piceous, the masticatory margin of the latter ferruginous. The fundamental sculpture reticulate-punctate like that of *Petersi*, but much finer and more superficial. The anterior half of the cheeks with a few large and shallow punctures. Pilosity greyish, very scanty, almost obsolete on the head and thorax. Pubescence greyish, less apparent than in *Petersi*. Head, excluding the mandibles, nearly one-fourth longer than wide, the sides fairly convex, the posterior margin shallowly concave, the posterior angles rounded, more narrowed in front than in *Petersi*. Mandibles 7-dentate, feebly shining, microscopically reticulate-punctate, and with a few large piligerous punctures. Clypeus strongly carinate, lobed, the anterior margin of the lobe straight and crenulate. Frontal carinae closer together than in *Petersi*, two-thirds longer than their greatest distance apart. Frontal area distinct. Eyes small, placed behind the middle. The scapes not flattened, just reaching beyond the occiput. Pronotum moderately convex transversely, very feebly so longitudinally, with rounded but fairly distinct shoulders. Mesonotum as long as wide. Metanotum distinct, three times wider than long. Epinotum with both faces more oblique than in *Petersi*. Scale a little higher than the petiole is long, the anterior face convex transversely, feebly so vertically, the posterior face concave, the dorsal edge obtuse. Tibiae cylindrical, armed with a few setae below, not densely pilose as in *Petersi* and *Eugeniae*. Very much like *Petersi*, but much smaller and with differently shaped head, scale and tibiae.

♀ minor, 7.5-8.5 mm. Pubescence somewhat more yellowish than in the ♂. Apical margins of the abdominal segments narrowly testaceous. Head very long and narrow, excluding the mandibles twice as long as wide. The sides in front of the eyes straight, slightly convergent anteriorly, behind the eyes moderately convex, the posterior margin almost straight. The scapes extend beyond the

hind margin by nearly half their length. Eyes fairly convex, placed at the posterior third. Clypeus subcarinate, the anterior margin of the lobe convex. Dorsum of epinotum narrower than in the 2♂, twice as long as the oblique declivity. Scale of petiole thicker than in the 2♂, the posterior face feebly convex, the upper half of the anterior face oblique and sloping backwards. Otherwise like the 2♂.

♂ media, 9 mm. Intermediate in the shape of the head between the 2♂ and the ♂ minor. The sides less convex, the posterior margin less emarginate, the posterior angles less rounded than in the 2♂; widest a little behind the eyes and more than one-third longer than wide.

Tulbagh, Paarl, Cape Prov. (Dr. Peringuey).

(S.A.M. coll.; types of 2♂ and ♂ media in that collection).

C. RUFOGLAUCUS, Jerdon.

Madras Journ. Litt. and Sc., vol. 17, 1851.

The type of the species is confined to India and Burma. It is represented in the Ethiopian region by numerous races and varieties. The classification of some of these forms seems to be rather confused, their status as sub-species or varieties being continually changed about by various authors. In my opinion, they are all closely allied, excepting race *vestitus*, and should perhaps be treated as varieties only of the race *cinctellus* Gerst.

RUFOGLAUCUS, race CINCTELLUS, Gerstaecker.

Monatsb. Akad. Wiss. Berlin, p. 262, ♂, ♀, ♂, 1858.

2♂, 8-9 mm. Black; scapes, anterior margin of the head and tibiae dark reddish brown, femora piceous, flagellum, mandibles and tarsi ferruginous. Apical margins of abdominal segments yellowish white. Head and thorax dull, legs moderately shining. Head very closely and finely reticulate-punctate, with a few very shallow pubescent punctures on the anterior half of the cheeks. Thorax, petiole, and abdomen microscopically rugulose and coriaceous, the sculpture on the abdomen entirely hidden by the pubescence. The latter is decumbent, yellowish white and very sparse and short on the head, finer and more abundant on the antennae, longer and fairly abundant on the thorax, on the sides of which and on the coxae it is almost silvery white. Abdomen with a very dense, fairly long and decumbent pale golden pubescence, which to the naked eye presents a more or less chequered pattern, somewhat as in *Plagiolepis custodiens*. The

hairs are directed obliquely towards the middle longitudinal line of the segments, those on the inner basal half being almost transverse in direction. On the narrow middle longitudinal line the hairs are parallel to the line, so that in some positions it appears almost glabrous. Pilosity long, yellowish white, sparse on the head and thorax, moderately abundant on the abdomen. Anterior margin of the clypeus with yellow, porrect hairs. Head subtriangular, excluding the mandibles barely longer than wide, the sides fairly strongly convex, the posterior margin feebly so, gradually narrowed anteriorly. Mandibles moderately shining, very finely striolate and punctured, with 6 or 7 teeth. Clypeus strongly carinate, its lobe short and with a straight anterior margin. Frontal area triangular, indistinct behind. Scapes not flattened, extending just beyond the hind margin of the head. Eyes feebly convex, placed just behind the middle of the sides. Thorax fairly convex lengthwise, L. = 3 H.

Metanotum indistinctly defined. Dorsum of epinotum oblique, narrow above but not cristate, a little longer than the subvertical declivity, their junction rounded. Scale higher than the petiole is long, the anterior face moderately convex, the posterior almost flat, the dorsal edge obtuse, somewhat flattened in the middle. Tibiae strongly compressed, not setose below.

♂ media, 7 mm. Scape reddish brown, mandibles bright brownish red. Pubescence on the head longer and more abundant, on the abdomen less abundant than in the 2♂. Head oblongo-ovate, two-fifths longer than wide, slightly narrowed in front, the sides feebly convex in front of the eyes, more convex behind them, the posterior margin also convex. The scapes extend beyond the hind margin by two-fifths of their length. Lobe of clypeus shorter and wider than in the 2♂, arcuate in front. The declivity of the epinotum more oblique. Scale of petiole a little thicker. Otherwise like the 2♂.

♂ minor, 5.5–6.5 mm. Like the ♂ media, but with the head narrower, half as long again as wide, widest across the eyes or posterior third, the sides in front of the eyes straight and more convergent anteriorly. Dorsum of pronotum distinctly flattened lengthwise. Scale proportionally narrower and thicker.

♀, 13.3 mm. Colour, sculpture, pilosity etc. as in the 2♂, but the pubescence of the abdomen is of a darker golden colour. Mesonotum and scutellum very finely reticulate-punctate, the convex anterior portion of the mesonotum, the scutellum and the metanotum slightly shining; the scutellum has a few large and shallow punctures. Head like that of the ♂ media but trapezoidal, as long as wide behind, the

sides moderately convex, the posterior margin straight, the posterior angles less rounded. Thorax almost parallel-sided, the mesonotum a trifle longer than wide. Dorsum of epinotum convex lengthwise, oblique, twice as wide at the base as across the apex, shorter than the vertical declivity. Scale higher and thinner than in the ♀, the dorsal edge fairly trenchant. Deälated. Otherwise like the ♀.

♂, 6-6.5 mm. Piceous, the basal half of the scape, the anterior half of the head, the mandibles, tibiae and tarsi more or less reddish brown. Head, mesonotum and scutellum dull, very closely and finely reticulate-punctate. Epinotum and petiole moderately shining and superficially reticulate, abdomen finely reticulate-rugulose, dull, except the apical margins of the segments which are slightly shining. Pubescence greyish, much sparser and shorter everywhere than in the ♀, and not hiding the sculpture on the abdomen. Pilosity longer, thinner and more plentiful. Posterior two-thirds of the head, including the eyes, semicircular in outline, the anterior third parallel-sided or nearly so. Clypeus subcarinate, the anterior margin arcuate. Eyes very large and convex, occupying the middle third of the sides. Ocelli fairly large. The scape extends beyond the hind margin of the head by half its length. Mandibles with a blunt apical tooth, the rest of the masticatory margin convex. The two faces of the epinotum form in profile a continuous arc. Scale as high as long below, conical in profile, the anterior face feebly concave from side to side, the posterior face convex, the dorsal edge blunt and deeply emarginate. Wings hyaline, nervures pale ochreous, stigma pale yellowish brown.

A very common species over the greater part of S. Africa.
(S.A.M., R.M., G.A. colls.).

Race CINCTELLUS, var. USTITHORAX, Forel.

Zool. Jahrb., vol. 29, p. 271, ♂, 1910.

This variety differs from the race as follows :—

♂. Head pale yellowish brick-red, the anterior half paler than the posterior, the lateral pieces of the clypeus and the vertex more or less brownish red. Thorax brown, the disc of the mesonotum usually more or less brownish red, an ill-defined spot on each side of the pronotum pale brick-red. Mandibles, flagellum, apices of the femora, tibiae and tarsi ferruginous (burnt sienna).

The junction of the two faces of the epinotum is less angular than in the type of the race, and the scale is a little thinner above.

Pubescence on the abdomen more greyish, much shorter and much less abundant, not hiding the sculpture or colour of the integument and not presenting a chequered pattern. The dirty-white apical bands on the abdominal segments a little wider.

♂ media and minor. Very dark brown, almost piceous, usually only the anterior half of the head of a pale colour, or reddish ochreous. Dorsum of thorax less convex than in the ♀ of *cinctellus*. Abdomen as in the 2♂. The pubescence on the head and thorax as abundant as in the type of the race.

♀, 11.5–12 mm. (hitherto undescribed). Anterior half, or sometimes the whole of the head excepting the vertex, brick-red or yellowish red. The thorax reddish brown, the pronotum and anterior margin of the mesonotum redder. Somewhat smaller than the type of the race, the head narrower and less convex-sided, one-fourth longer than wide behind. The pubescence of the abdomen almost as abundant as in the type of the race but of a pale golden colour, and the whitish apical margins wider. Wings tinged with yellow, the nervures reddish ochreous, stigma brownish yellow.

Springvale, Bulawayo and Victoria Falls, S. Rhodesia. Not common.

(S.A.M., R.M., G.A. colls.; type of ♀ in my collection).

RUFOGLAUCUS, race ZULU, Emery.

Ann. Soc. Ent. France, vol. 63, p. 50, ♂, 1895.

2♂, 9–10 mm. ♂ media or minor, 7 mm. Like *cinctellus* but larger. In the 2♂ the scapes are longer, extending beyond the hind margin by a little more than one-sixth of their length. In the ♂ minor the scapes are also longer, extending back beyond the pro-mesonotal suture, (just touching it in *cinctellus*). In both the 2♂ and ♂, the dorsal profile of the thorax is less convex than in *cinctellus*, the convexity of the epinotum in particular being lower, the junction of the two faces arcuate, the declivity much shorter than the dorsum (nearly as long in *cinctellus*).

Durban, (Marley, Cooper); Mountains of Natal, (Haviland).
(S.A.M., R.M., G.A. colls.).

RUFOGLAUCUS, race FLAVOMARGINATUS, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 28, p. 664, ♂, 1862.

This species is unknown to me. It has been recorded from Natal, by Santschi, as a variety of *cinctellus*. In a subsequent paper that

author raises it again to the rank of a race. I am unable to obtain access to the original description of Mayr, but from Emery's table of this group in the Ann. Soc. Ent. France, vol. 63, p. 48, the following characters can be extracted:—

The two faces of the epinotum form a distinct though considerably rounded angle, as in *cinctellus*. It differs from the latter in having the pubescence of the 2nd abdominal segment convergent towards the middle line, but not undulate, the hairs on the basal half of the segment not transverse in direction, merely oblique like the rest of the pubescence.

Certain specimens from Natal, named for me by Dr. Forel as of this race, do not agree with the above diagnosis, and should be referred to the race *zulu*.

Race FLAVOMARGINATUS, var. CONTRARIA, Santschi.

Ann. Soc. Ent. France, vol. 84, p. 509, 2♂, 3♀, 1916.

“♂, 6.5–10.5 mm. Differs from *flavomarginatus* by having the pubescence on the abdomen denser and of a golden colour, whereas it is greyish in the race. The pubescence of the abdomen is also more undulated, almost as much as in *cinctellus*. The front of the head is much darker. Mandibles flagellum, tibiae and tarsi of a dark brownish red. Tibiae even more compressed than in *flavomarginatus* (not so very much in *cinctellus* and its varieties). Otherwise like *flavomarginatus*.”

The pubescence on the abdomen would be more correctly described as being of a bronzy-golden colour. The anterior margins of the head and the mesonotum have a more or less reddish tinge, and the cheeks are castaneous brown. The erect pilosity on the head and thorax of a darker yellow than in *cinctellus*. The sides of the head less convex than in that race.

Victoria Falls, S. Rhodesia.

(R.M., G.A. colls.).

RUFOGLAUCUS, race COSMICUS, Smith.

Cat. Hymen. B.M. VI, p. 34, 2♂, 3♀, 1858.

Smith's description is valueless as it applies equally well to several forms of this species. Emery (Ann. Soc. Ent. France, vol. 63, p. 49) records this race from Pretoria, Hamman's Kraal, Hebron and

De Aar. According to his table it has the following characters :—The angle between the two faces of the epinotum effaced ; pubescence as in the type of the species and *cinctellus*. Black ; 4·5–7 mm. Pubescence on the abdomen brilliant golden.

RUFOGLAUCUS, race VESTITUS, Smith.

Cat. Hymen, B.M. VI, p. 32, ♀, 1858.

♂, 7·7–10 mm. Head, thorax, legs, antennae and mandibles varying from yellowish brick-red to dark brick-red, the vertex usually with a transverse and very indistinct brownish-red patch between the eyes. Abdomen dark brown, the colour hidden to a great extent by the pubescence. Pilosity much shorter and less abundant than in *cinctellus*. Legs dull, densely and finely pubescent. Pubescence on the abdomen of a pale greyish-golden colour and arranged differently from that of *cinctellus*, having the appearance of 6 longitudinal alternately dark and light bands. This is due to the pubescence of the 2nd and 3rd segments, and partly also of the other segments, being arranged so that the hairs converge from the middle of the right and left halves towards the middle longitudinal line, and in being strongly undulate or transverse in direction ; whereas the hairs on the outside of the middle of the right and left halves of the segments are directed obliquely outwards and posteriorly. The head is nearly one-sixth longer than wide, much less narrowed in front or less triangular than in *cinctellus*, almost subquadrate, its greatest width being only two-thirds wider than the anterior margin, whereas the greatest width in *cinctellus* is twice as wide as the anterior margin ; the sides are less convex than in *cinctellus*, and the posterior margin much more shallowly concave. It is a more slender insect than *cinctellus*, the thorax and abdomen clearly narrower. The convexity of the thorax is lower, especially over the posterior half. The dorsum of the epinotum, seen from the side, is slightly but distinctly concave over the basal half and is longer than the oblique declivity, which it joins in a low and continuous curve. In the concave base of the epinotum it resembles *C. valdeziae* Forel, and differs thereby from all the other forms of *rufoglaucus* in S. Africa. Tibiae compressed, with 3 or 4 short setae on the ventral margin.

♀ minor, 7 mm. Colour, pubescence and sculpture as in the ♂. Head, including the closed mandibles, ovate, the sides convex behind the eyes, rectilinear and convergent in front of them, the posterior margin feebly convex. Excluding the mandibles, the head is about

two-fifths longer than wide, the eyes feebly convex and placed at the posterior third. The scapes extend beyond the hind margin of the head by half their length. Otherwise like the ♂.

♀, 12 mm. Colour, sculpture and pubescence as in the ♂. Mesonotum in front and the scutellum fairly smooth and shining. Head only very little wider behind than in front, the posterior margin straight, the sides almost straight or only feebly convex, one-fifth longer than wide. Dorsum of epinotum longer than the declivity, the latter subvertical. Wings brownish ochreous. Otherwise like the ♂.

Partial to hot and sandy localities. Ababis, S.W.A. ♂, ♀, ♀. (R. W. E. Tucker); Natal, (Marley); Mafeking.

The examples from Ababis have a much darker red colour on the head and thorax than the others, and in the ♂ and ♀ have an elongate longitudinal streak of reddish ochreous on each side of the 2nd abdominal segment. However, the increasing intensity and extent of the red coloration is what one would expect in eremitic forms, and does not appear to me in this instance to merit separation as a variety.

(S.A.M., R.M., G.A. colls.).

RACE *VESTITUS*, var. *PECTITA*, Santschi.

Rev. Zool. Afric., vol. 1, p. 212, ♂, ♀, 1911.

♂, 8.5–9.5 mm. Head very dark reddish brown, tibiae, tarsi, antennae, mandibles and anterior margin of the clypeus more or less ferruginous, the apical third of the tibiae almost brown, the rest of the body blackish brown. Pubescence of the abdomen like that of the race. Dorsum of epinotum feebly concave near the base; abdomen ovate-lanceolate and more pointed at the apex than in the race. Otherwise like the type of the race.

♀ minor, 6.5 mm. Colour etc. as in the ♂, but the scapes reddish brown with the basal fourth reddish ochreous, the mandibles and anterior margin of the head also reddish ochreous, the posterior tibiae brown and ferruginous only near their bases. The pronotum is slightly flattened above, less convex than in the ♀ of the race.

♀, 10–11 mm. Black; mandibles ferruginous, flagellum and tarsi very dark brown. The junction of the two faces of the epinotum less arcuate, the scale of the petiole thinner, the dorsal edge less rounded, the abdomen narrower in proportion to its length and more pointed at the apex. Otherwise like the ♀ of the race.

Bulawayo, Bembesi, S. Rhodesia.

Rarely found nesting in sandy soil. The nest-entrance is surrounded by a circular, high and sharp-edged crater. The walls of the crater, both inside and out, are as steep as the angle of rest for the earthen particles will allow them to be. This form of crater is distinctive of this insect.

(S.A.M., R.M., G.A. colls.).

C. VALDEZIAE, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 16, p. 90, ♂, ♀, 1879.

This form is very closely related to race *vestitus*, and might even be regarded as an extreme form of the same. But, apart from one or two very constant structural differences, it also differs very greatly in habits, being not only exceedingly like *Plagiolepis custodiens* to the naked eye, but also closely mimicking that species in its mode of life and rapid movements. For these reasons it appears best to treat it as a distinct species.

♂, 7-8.7 mm. Colour not unlike that of *vestitus*, but the abdomen is blackish brown, the rest of the body more brownish red or sometimes more ochreous red than *vestitus*. The anterior third always paler or more ochreous red than the rest of the head. Pubescence of head and thorax silvery grey. Pubescence of the abdomen greyish white with a slight tinge of yellow, barely golden, longer but less dense than in *vestitus*, not hiding the integument. Pilosity distinctly longer than in that species and also more yellowish. Head, including the closed mandibles, triangular, the sides less convex and converging more rapidly in front than in *vestitus*. In the latter the head is as wide in the middle as it is at its posterior sixth, whereas in *valdeziae*, it is clearly narrower there than at the posterior sixth. The mandibles are more shining and slightly more coarsely punctured. The frontal carinae more divergent behind. The eyes larger, the whole head a little less dull than in *vestitus*. The chief difference between the two forms lies in the shape of the epinotum. In *valdeziae* the whole of the dorsum of the epinotum is concave lengthwise, more deeply than in *vestitus*, the declivity is less oblique and joins the dorsum in an obtuse angle. The mesonotum is more convex lengthwise. The scale of the petiole is subacuminate in the middle of the dorsal edge, not straight as in *vestitus*. Posterior tibiae much less compressed than in *vestitus*, almost cylindrical.

♀ minor, 5.3-6.5 mm. In the larger examples the colour is like that of the ♂, in the smaller the colour is much darker, the head,

thorax, legs and petiole being dark reddish brown, the pronotum more reddish than the rest of the thorax, the anterior three-fifths of the head ferruginous or sometimes ochreous red. It differs from the ♀ minor of *vestitus* in having the head much shorter or only a quarter longer than wide, widest just behind the eyes, which are much larger and more convex than in *vestitus*, placed at the posterior third. The head is also less narrowed in front, the anterior margin being at least three-fourths as wide as the greatest width (two-thirds or less in *vestitus*). Epinotum like that of the ♂. Otherwise like the ♂.

“♀. Two ♀, ex. coll. Saussure, from Mozambique, probably belong to this species, but they have lost the abdomen. Probable length 11 mm. Colour, pubescence, sculpture and pilosity as in the ♂. Head elongate, almost rectangular, slightly widened behind. Clypeus as in the ♂. Epinotum rounded. Scale rounded, thinner than in the ♂, slightly emarginate above in one of the specimens. Wings very slightly yellowish, the nervures distinct.”

Valdezia, Transvaal, (Junod); Hope Fountain and Essexvale, S. Rhodesia.

The nest is placed in bare patches of ground like that of *P. custodiens*, and, as is the case with that species, the excavated material is sprinkled in a thin layer over a large radius. This ant has the same jerky movements as *custodiens*, and, in addition to the similarity in the arrangement of the abdominal pubescence, the ♀ minor, like that of *custodiens*, is much more darkly coloured than its ♂. Altogether it is deceptively like *custodiens* in life, and without doubt is a mimic of that powerful species.

(S.A.M., R.M., G.A. colls.).

SUB-GENUS MYRMOSAGA, Forel.

For characters see table of sub-genera.

In this sub-genus we have only two species.

C. SCHOUTEDENI, Forel.

Rev. Zool. Afric., vol. 1, p. 281, ♀ minor, 1911.

Ann. Soc. Ent. Belg., vol. 57, p. 146, ♂, 1913.

♂, 6.5 mm. Black; antennae, tibiae and tarsi brown or reddish brown, the mandibles castaneous. Head subopaque, clypeus, mandibles, legs and thorax moderately shining, petiole and abdomen

very shining. Head and pronotum closely and finely reticulate-punctate, the rest of the thorax, the petiole and abdomen transversely rugulose. Cheeks and pronotum sparsely and very shallowly punctured, the punctures pubescent. Pubescence decumbent, greyish, very sparse and evenly distributed, somewhat longer and more abundant on the antennae and tibiae. Pilosity dirty white, fairly long, sparse everywhere, particularly on the thorax. Head strongly convex above, a little longer than wide, not much wider behind than in front, the sides feebly convex, the posterior margin shallowly concave, the posterior angles narrowly rounded. Mandibles strongly punctured, 7-dentate. Clypeus subcarinate, the anterior margin straight, hardly lobed. The frontal carinae as wide apart as long. Eyes nearly flat, their greater part lying behind the middle. Scapes short, not reaching the posterior margin of the head. Pronotum twice as wide as long, its dorsum very feebly convex, with much rounded but fairly distinct shoulders. Mesonotum somewhat rapidly narrowed posteriorly, nearly as long as wide in front. Metanotum very small. Seen from the side, the profile of the thorax is convex and rises from the front to the base of the mesonotum, thence descending more steeply to the brow of the declivity. Dorsum of epinotum almost straight, a trifle longer than the subvertical declivity which it joins in a distinct angle, slightly rounded at the extreme apex. The declivity is slightly concave vertically. Scale of petiole thick, higher than long, its anterior face convex, with a distinct dorsal face which is two and one-third times wider than long, the posterior face flat. Tibiae cylindrical, not setose below.

♂ minor, 3·8–4 mm. Black; basal half of the scapes, the flagellum, mandibles and tarsi reddish or brownish ochreous. Sculpture like that of the 2♀ but finer, the head shining, the thorax as shining as the abdomen. Pilosity on the abdomen longer than in the 2♀. Head not quite one-fourth longer than wide, slightly narrowed in front, the posterior margin and the sides behind the eyes semicircular, the sides in front of the eyes rectilinear and convergent anteriorly. Eyes moderately convex, occupying the third 4th of the sides. The scapes extend beyond the hind margin by one-third of their length. Clypeus sharply carinate, not lobed, the anterior margin nearly straight. The disc of the pronotum is almost flat, with the shoulders submarginate. Meso-epinotal suture very feeble, obsolete in the middle. The dorsum of the epinotum feebly concave longitudinally, twice as long as the subhorizontal declivity. Scale of petiole nodiform, the anterior and posterior faces vertical, the dorsal face large

and convex, very little wider than long, seen from above almost circular.

Redbank, S. Rhodesia ; Willowmore, Cape Prov. (Brauns).

The specimens from Willowmore might perhaps be considered as a slight variety. The ♂ has the dorsum of the epinotum concave as in the ♀, the declivity is less oblique and the scale is thinner. In the ♀ minor the scale is less nodiform and thinner, the dorsal face merging into the posterior face in a curve, not truncate as in the examples from Redbank. The colour of the scapes is entirely black.

(R.M., G.A. colls.).

C. BEDOTI, Emery, var. KLUGII, Emery.

Rev. Zool. Suisse, vol. 1, p. 196, 1893.

(variety), Ann. Soc. Ent. France, vol. 63, p. 51, ♀, minor, 1895.

"Extremely close to the type of the species, from which it hardly merits separation as a geographical variety. The puncturation is the same, and the head is feebly shining in front. The clypeal carina is more distinct, . . . pilosity as in the other forms of *Bedoti*."

Capetown, (Simon).

The type of the species is Malayan, (Borneo, Sula), and is described as follows :—

"♂ minor, 3·5–4·7 mm. Black ; mandibles, trochanters, tibiae and tarsi in greater part, and sometimes the flagellum, ferruginous, the base of the scapes testaceous ; shining, very delicately reticulate-punctate, with sparse pubescent and pilose punctures, the cheeks in front more deeply punctured and subopaque, abdomen transversely striolate ; sparingly pubescent and with a long and scanty pilosity, the scapes and tibiae hardly pilose. Head ovate, the clypeal carina almost obsolete, mandibles 5-dentate, shining, punctate ; frontal carinae divergent and sigmoid. Pronotum and mesonotum moderately convex, the meso-epinotal suture distinct, the epinotum compressed, its base slightly elevated and thence narrowly flattened above, seen from the side subrectangular, with a saddle-shaped impression, subgibbose behind ; the scale fairly thick, truncate behind, its upper margin rounded. . . . The epinotum is compressed and presents a characteristic profile. After rising a little from the base of the mesonotum it descends in a gentle slope which represents the slightly depressed dorsum, and passes thence by an abrupt curve into the concave declivity. In the large specimens the profile of the dorsum of the epinotum is excavated in a saddle-shaped manner, which makes

the convexity behind it appear gibbous. The fairly thick scale has four whitish hairs; there are 5 or 6 on the epinotum, and some on the thorax and head. . . .”

SUB-GENUS MYRMAMBLYS, Forel.

For characters see table of sub-genera.

Key to the species, ♂ and ♀.

- (2) 1. Body entirely dull; 1st segment of abdomen closely reticulate-punctate
Berthoudi, Forel.
- (1) 2. At least the abdomen shining; no part of the abdomen reticulate-punctate.
- (6) 3. ♂, Head steeply and rather abruptly truncate in front; ♀ minor, head clearly narrower in front than behind; colour either yellowish brown or black.
- (5) 4. ♂, Head strongly reticulate-punctate, the truncate face very coarsely rugoso-reticulate; meso-epinotal suture not deep; ♀ minor, colour yellowish brown
ostiarius, Forel.
- (4) 5. ♂, Head evenly reticulate-punctate all over; meso-epinotal suture wide and very deep; ♀ minor, colour black
aequitas, Santschi.
- (3) 6. ♂, Head not clearly truncate, seen in profile it has a steep anterior face which forms a continuous curve with the frons and vertex; ♀ minor, head oval, hardly narrower in front than behind,
Brookei, Forel.

C. BERTHOUDI, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 16, p. 108, ♂, 1879.

“♀ (= ♂), 7.5 mm. Head trapezoidal, the posterior margin straight, the sides convex. Mandibles short, thick, moderately pilose, 7-dentate, with numerous and deep, large punctures; very finely reticulate between the punctures. Clypeus narrow, feebly convex, almost rectangular and parallel-sided, not carinate, barely lobed. Its anterior margin is straight in the middle, and fairly deeply emarginate on each side. Clypeal pits deep. Frontal area very small but distinct. Frontal carinae long, longer than the clypeus, strongly curved. Thorax fairly short, evenly arched from front to back, widened in front, compressed behind. The pronotum has in front on each side a slight tubercle or obtuse angle, (like that of *C. fulvopilosus*, but much less distinct). Pro-mesonotal suture distinct, meso-epinotal suture entirely obsolete. The dorsal surface of the mesonotum is fairly wide and feebly convex. The epinotum is tectiform and has no basal face; its sides rise in a slope up to the summit which forms a distinct but obtuse longitudinal ridge. The declivity is triangular and

oblique. Scale rather narrow, thin, slightly convex in front, flat behind. Abdomen oval. Legs and antennae of medium length. Mandibles shining. Body entirely dull. Head and dorsum of the thorax very densely and deeply reticulate-punctate. Sides of the thorax very densely and deeply striate-reticulate or striato-punctate longitudinally. Scale transversely striate. First segment of the abdomen and the apical halves of the following segments very finely, closely and deeply reticulate-punctate. The base of the 2nd-5th segments very finely, closely and deeply striate transversely or obliquely. Legs punctate or reticulate-punctate. Scapes very finely reticulate. The scapes and legs have also a few deep and large punctures which are not present on the body. A few long, whitish, very thick and blunt hairs, (as in *C. fulvopilosus*), occur here and there over the whole body. The latter, including the legs and antennae, with a very fine and short, sparse and whitish pubescence. Tibiae and scapes without erect hairs. Black. Mandibles and flagellum castaneous brown. Basal half of the scapes yellowish rusty-red. Apical margins of the abdominal segments narrowly testaceous.

Valdezia, Transvaal, 1 specimen, (Berthoud)."

C. OSTIARIUS, Forel. (Plate IX, fig. 141).

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 258, 24, ♂, 1914.

24, 8.5-9 mm. Head black or very dark brown, the anterior corners and anterior third of the clypeus sometimes brownish ochreous, thorax and abdomen brown, the latter darker than the thorax, legs and antennae brownish ochreous, mandibles brown, apical margins of the abdominal segments testaceous. Occiput slightly shining, the rest of the head dull. Anterior half of the head very coarsely rugoso-reticulate, the reticulations prominent, the spaces in between reticulate-punctate, the posterior half of the head strongly and deeply reticulate-punctate, the sculpture becoming feebler towards the occiput. Mandibles stout and very convex, finely reticulate, also closely, coarsely and deeply punctured, armed with 7 or 8 teeth. The mandibles are inserted at some distance from the sides. Thorax, legs and abdomen moderately shining, very finely rugulose. A very sparse, erect and yellowish pilosity over the whole body; a very fine pubescence on the legs and antennae, almost absent elsewhere. Head rectangular, a trifle longer than wide, the middle three-fifths of the sides straight, the rest of the sides slightly convex, hardly wider behind than in front, the posterior margin feebly convex. The

anterior portion of the head, from the anterior extremity of the frontal carinae forwards, subvertically truncate. Median area of the clypeus twice as long as wide, its anterior margin convex, surrounded by a deep groove; the lateral pieces of the clypeus triangular and very small. Frontal carinae widely divergent behind, the distance between them behind being one-third greater than their length, their posterior ends are nearer to the sides of the head than they are to each other. The scapes extend beyond the hind margin by about the length of the 1st and 2nd joints of the flagellum. Eyes large, flat, placed at the posterior third of the sides. Dorsum of thorax feebly convex longitudinally, a little more convex transversely. Pronotum one-third wider than long. Mesonotum as long as wide or a little longer, much narrower behind than in front. A trace of the metanotum present. Sides of the epinotum vertical, the dorsum as wide at the apex as at the base, twice as long as wide,* joining the vertical and slightly longer declivity by a very short curve. Scale thin, feebly convex in front, flat behind, the dorsal edge trenchant and feebly emarginate in the middle. Thorax highest at the apex of the dorsum of the epinotum. Tibiae cylindrical, not setose below.

♀ minor, 6-6.5 mm. Brown, the pronotum and anterior half of the head usually more yellowish brown. Very finely and superficially reticulate-rugulose on the head and thorax, the abdomen transversely rugulose. The whole body fairly shining. Pilosity exceedingly sparse, the pubescence like that of the ♂. Head of the normal form, not subtruncate in front. The form of the body more or less like that of the ♀ minor of the *Myrmoturba* group. Head oval, half as long again as wide, a little wider behind the eyes than in front of them, the eyes large, convex and placed behind the middle. Mandibles sparsely punctured, narrower and longer than in the ♂, the external margin only slightly convex. Frontal carinae much less divergent than in the ♂. Clypeus convex transversely, hardly carinate, of the usual shape of this caste. The scapes extend beyond the hind margin by half their length. Thorax strongly compressed posteriorly, its posterior half very convex lengthwise, highest at the base of the epinotum, $L. = 2\frac{3}{4} H$. The dorsum of the epinotum three-fifths longer than the subvertical declivity, their junction forming a narrowly rounded angle. Scale oval, the upper margin trenchant and entire. Otherwise like the ♂.

♀, 10.5 mm. (hitherto undescribed). Colour, sculpture, pilosity and

* In Forel's description the statement, "twice as wide as long," is evidently a slip of the pen.

pubescence as in the 24. The anterior half of the mesonotum fairly abundantly but shallowly punctured. Head subvertically truncate as in the 24, but a little longer than in the latter, the sides moderately but distinctly convex, more narrowed in front. Mandibles with 8 teeth, the posterior four small and obtuse. Mesonotum and scutellum moderately shining, dorsum of epinotum dull. The latter is trapezoidal, fairly convex transversely, less so longitudinally, two-thirds wider at the base than at the apex, twice as wide as long, the declivity vertical, rounded above, longer than the dorsum. Scale as in the 24, higher than the petiole is long below. Wings hyaline, nervures and stigma pale yellowish brown.

♂, (hitherto undescribed), 6.2 mm. Black; legs and antennae dark brown. Head, thorax and petiole very finely reticulate-punctate, here and there only reticulate, moderately shining. Abdomen finely rugulose and shining. Pubescence and pilosity exceedingly scanty, except on the flagellum which is densely pubescent and punctulate, its 1st joint pyriform. Head one-sixth wider across the eyes than long, the sides behind the eyes together with the posterior margin forming a low convexity, the sides in front of the eyes strongly convergent anteriorly. Eyes large, very convex; the ocelli also large. Clypeus convex transversely, the anterior margin arcuate. Mandibles dull, the apex subacute, edentate. The scape extends beyond the hind margin by three-sevenths of its length. Mesonotum very convex or semi-circular from side to side in front. Scutellum gibbous. Metanotum large, the dorsum and declivity of the epinotum, seen in profile, form a quadrant. Petiole nodiform, subquadrate, with a small tooth on each side near the base. Wings fuscous, nervures and stigma brown.

Durban. Nesting in hollow stems, the several entrances to the nest guarded by the 24 24 which close the apertures with the truncated faces of their heads. The only nest which I found was not a large one, containing merely two dozen or so ♂♂ and 24 24.

(S.A.M., R.M., G.A. colls.; types of ♀ and ♂ in my collection).

C. AEQUITAS, Santschi.

Ann. Soc. Ent. France, vol. 88, p. 387, ♂, ♀, ♂, 1919.

24, 5.8–6.4 mm. Black, antennae, (except the last two joints which are piceous), brown, tarsi dark brown, the anterior half or two-thirds of the head reddish or brownish ochreous, the clypeus and frons nearly always darker and ferruginous brown. Mandibles ferruginous. Head dull, closely and evenly reticulate-punctate all over, the sculpture

becoming a little weaker towards the occiput; on the frons and cheeks a sparse and shallow puncturation superimposed. Thorax fairly shining, finely reticulate-punctate on the pronotum, reticulate-rugulose on the meso- and epinotum, also sparsely and shallowly punctured; the sides of the meso- and epinotum sharply and finely reticulate-punctate and dull. Scale and abdomen transversely rugulose and shining. A very fine, whitish and decumbent pubescence on the body and legs, almost wanting on the head. A sparse, erect and fairly thin pilosity on the vertex, thorax and abdomen, the brow of the declivity and the upper edge of the scale with several white and bristly hairs, thicker and longer than the rest of the pilosity. Head very similar to that of *ostiarius*, but with the truncation in front less abrupt. The head is one-seventh longer than wide, rectangular, the sides and posterior margin straight. The median area of the clypeus is a little longer than wide, its sides straight and parallel, its anterior margin arcuate and slightly indented in the middle, the lateral pieces triangular, the clypeal pits between them and the median area deep. Frontal area triangular, indistinct. Frontal carinae widely divergent behind, but less so than in *ostiarius*, as near to each other as they are to the sides of the head. Eyes fairly flat, placed at the posterior third. The scapes do not reach the hind margin. Mandibles formed as in *ostiarius*, microscopically reticulate, sparsely and fairly coarsely punctured, with 6 or 7 teeth. Pronotum twice as wide as long, feebly convex transversely, the sides subvertical, the lateral margins, seen from above, straight over the posterior half. Mesonotum one and a half times wider than long, transversely subovate, the anterior margin slightly raised behind pro-mesonotal suture. Meso-epinotal suture very wide and deep, forming a V-shaped excision on the dorsal profile. Dorsum of epinotum, seen from above, oval, slightly longer than wide, convex lengthwise and transversely, sloping very slightly downwards to the vertical and equally long declivity, the brow of the latter narrowly rounded. Scale inclined forwards, seen from behind ovate, higher than the petiole is long, flat behind, feebly convex in front, the dorsal edge trenchant. Tibiae cylindrical, not setose below.

♂ minor, 3.1-3.8 mm. Black, basal two-thirds of the scapes reddish ochreous, the apical third, the flagellum, mandibles, tibiae and tarsi more or less reddish brown. Head and thorax subopaque, finely reticulate-punctate, the mesonotum and epinotum more rugulose and moderately shining. Pilosity and pubescence as in the 24. Head one-fourth longer than wide, the sides in front of the eyes

straight and moderately convergent, the outline behind the eyes convex. Eyes fairly convex, large, placed behind the middle. Anterior margin of the clypeus angular in the middle, the clypeus convex transversely but hardly carinate. Head of the usual form, not truncate. Mandibles narrow and shining, sparsely and sharply punctured, 6-dentate. The scapes extend beyond the hind margin by about one-third of their length. Pronotum more convex at the sides, mesonotum narrower than in the ♂, as long as wide. Mesoe-pinotal suture much shallower, but still fairly strong. Dorsum of epinotum convex in all directions, a little longer than the declivity; the latter oblique in its upper two-thirds and horizontal in the lower third. Scale of petiole nodiform, not higher than the petiole is long, with a convex upper face which is about twice as wide as long, anterior and posterior faces equally and feebly convex.

♀, 8 mm. Colour, sculpture, pubescence and shape of the head like that of the ♂. The pilose hairs on the epinotum and scale greyish, less coarse than in the ♂. Mesonotum and scutellum with a slight gloss, the former reticulate-punctate and with also a few large, shallow and piligerous punctures, the scutellum rugulose only. The mesonotum is parallel-sided, narrow, a little longer than wide. Metaepinotal suture wide and fairly deep. Dorsum of epinotum trapezoidal, twice as wide at the base as long, its junction with the declivity rounded. Declivity smooth, shining and vertical. Wings hyaline, nervures pale ochreous, stigma brownish yellow. Otherwise like the ♂.

♂, 3.8-4 mm. Black. The anterior third of the head nitidulous, the rest of the head and the mesonotum dull, the latter and the whole of the head finely reticulate-punctate, the scutellum, epinotum and petiole very superficially reticulate and shining. Abdomen transversely rugulose and shining. Pilosity greyish white, long, thin, fairly abundant on the clypeus, epinotum, petiole and abdomen. Shape of the head like that of *ostiarius* ♂, but the clypeus is more convex, subcarinate; 1st joint of the flagellum pyriform. Scutellum not gibbous, not higher than the mesonotum as in *ostiarius*. Petiole nodose, wider than long, the anterior face oblique and flat, the posterior face convex from above to below and forming thereby an indistinct dorsal face. Wings as in the ♀.

Unlike the majority of the sub-genus, this species does not nest in hollow twigs but in the ground. The entrance to the nest is a very small hole, not surrounded by excavated material. The hole is only large enough to admit one worker at a time, but I have been unable to ascertain whether the hole is closed by the ♂ in the usual way,

although on account of the colour of the truncated area of the head matching more or less the colour of the soil, it is very probable that it does do so.

Hillside, Bulawayo. 2♂♂, ♀♀ and several winged ♀♀ and ♂♂ in one nest.

(S.A.M., R.M., G.A. colls.).

C. BROOKEI, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 259, 2♂, ♀, 1914.

2♂, 6.8-7 mm. Head piceous, thorax and abdomen more or less dark brown or brownish black. Legs, flagellum and base of the scapes brownish ochreous. Mandibles dark ferruginous. Head delicately reticulate-rugulose, the anterior third more strongly sculptured, rather reticulate-punctate and fairly abundantly pilose, the hairs short, erect, blunt and yellowish. Thorax finely rugulose and feebly shining. Abdomen and scale transversely rugulose and shining. The pilosity and pubescence very short and sparse on the thorax and abdomen. Head subrectangular, one-fifth longer than wide, distinctly narrowed in front, the sides moderately convex, the posterior margin straight, the front of the head steep but not truncate. Median area of clypeus trapezoidal, about as long as wide, the anterior margin straight and not produced, feebly impressed transversely just behind the anterior margin. Mandibles dull, closely and finely striate, with a few large and deep punctures, fairly convex externally, 6-dentate. Frontal area lozenge-shaped, wider than long. Frontal carinae not wider apart than they are long. Scapes arcuate over the basal half, extending a little beyond the hind margin. Eyes feebly convex, placed nearly behind the middle of the sides. Thorax feebly convex lengthwise, metanotum short and indistinct, pro-mesonotal and meso-epinotal sutures moderately distinct. Thorax highest at the base of the epinotum. The dorsum of the latter a little shorter than the fairly steep declivity, the junction of the two faces obtusely angular. Scale thin, feebly convex transversely in front, flat behind. Tibiae cylindrical, not setose below.

♀ media, 6.8 mm. Reddish brown (burnt umber), the anterior third of the head paler, the abdomen brown, legs and antennae reddish ochreous. Seen from the side, the head is equally convex in front and behind. Sides of the head less convex than in the ♀ minor, the posterior margin straight or feebly concave. Otherwise like the ♀ minor.

♂ minor, 4.9–6 mm. Brown, the anterior half of the head and the pronotum paler. Legs and antennae ochreous, mandibles reddish brown. Very finely reticulate-rugulose, the abdomen transversely rugulose. Head and thorax feebly shining, the abdomen very shining. Pilosity and pubescence as in the 2♂, but the pilosity on the head is longer and not obtuse, confined to the clypeus and vertex, a little less abundant than in the 2♂. Head oval, two-fifths longer than wide, very little wider behind the eyes than in front of them. Eyes large and convex. Clypeus convex, carinate, the anterior margin moderately convex. Frontal carinae as wide apart behind as they are long. The scapes extend beyond the hind margin by two-fifths of their length. Sides of the epinotum and of the posterior half of the mesonotum vertical. Dorsum of epinotum two and a half times longer than wide, joining the shorter declivity in a wide arc. Scale of the petiole as in the 2♂ but a little thinner.

♀, (hitherto undescribed), 8.4 mm. Dark brown, the anterior third of the head, the pronotum and scutellum more or less reddish ochreous-brown. Head very steep in front and sculptured like that of the 2♂, with the same abundant and obtuse pilosity on the front part. Clypeus carinate. The head is longer and narrower than in the 2♂, the sides more convex and more convergent anteriorly, the posterior margin convex. Thorax like that of *aequitas* Santschi. Scale of the petiole wider than in the 2♂, the dorsal edge straight. Deälated.

Durban, (Marley, Cooper).

(S.A.M., R.M., G.A. colls. ; type of the ♀ in my collection).

SUB-GENUS COLOBOPSIS, Mayr.

For characters see table of sub-genera.

C. BIFOSSUS, Santschi.

Ann. Soc. Ent. France, vol. 85, p. 293, 2♂, 1916.

“2♂, 7 mm. Black, the anterior two-thirds of the head ochreous, brownish ochreous behind, as also the mandibles. Antennae, scrobes and tarsi brownish, posterior margins of the abdominal segments narrowly testaceous. Almost dull. Head and thorax densely and finely reticulate-punctate. The head is also covered with coarse rugae, generally reticulate, especially in front and at the sides where they form numerous irregular pits. These rugae are more or less serpiginous and elongated behind and in front. Declivity of the

epinotum and the abdomen finely striolate transversely, the abdomen duller than the thorax. Erect pilosity coarse, obtuse, white, disposed marginally on the epinotum, scale and abdominal segments, sparsely distributed elsewhere. Pubescence very short, decumbent, fairly scarce all over except on the antennae. Head cylindrical, obliquely truncate in front; seen in profile, it forms a trapeze of which the base is as long as the height; seen from above, it is square, with the angles slightly rounded. Eyes of medium size, placed at about the posterior third of the sides. Frontal carinae very divergent, the interval between them being double their distance from the eyes; they limit a scrobe which can accommodate the anterior half of the scape. The latter, fairly compressed, extends by almost one-fourth of its length beyond the hind margin of the head. Frontal area rounded posteriorly. Clypeus narrow, one and a half times longer than wide, flat or very feebly carinate, the anterior margin roundly lobate, the sides marginate. On each side of the clypeus there is a large semioval depression, limited outwardly and behind by the raised margin of the truncation, inwardly by the sides of the clypeus. Mandibles sculptured like the head, 6-dentate. Pronotum a good deal narrower than the head, with feeble shoulders, not marginate. Mesonotum as long as the pronotum, forming in profile together with the epinotum a nearly straight horizontal line, (barely convex). Metanotum distinct. Dorsum of the epinotum convex transversely, forming with the declivity a slightly obtuse angle, almost rectangular. The declivity, which is as long as the dorsum, is marginate, slightly concave below, its rounded upper margin subogival. Scale thin, four to five times as high as thick, the anterior face fairly convex, the posterior face almost flat, the margins trenchant, the summit arcuate. Abdomen higher at the base than the scale, as wide as the head, oval. Tibiae cylindrical, not setose below."

Caledon, Cape Prov. (Dr. L. Peringuey), 1 ♀.

Type in the S.A.M. coll.

SUB-GENUS ORTHONOTOMYRMEX, Ashmead.

Canadian Entomologist, vol. 37, p. 384, 1905.

For characters see table of sub-genera.

With the exception of *Barbarossa* and *vividus*, all our species of this sub-genus have a very strong sculpture on the head and thorax, plainly visible under a low magnification, and consisting of a sharply

defined reticulate-puncturation. The abdomen is sometimes densely pubescent, in other cases the body is more or less sparsely pubescent and pilose, the pilose hairs on the epinotum and scale being in some species thick, bristly and whitish. In all our species except *Barbarossa*, the upper part of the epinotum is compressed and the dorsal face is more or less clearly marginate, meeting the more or less vertical sides rectangularly. Except in *Barbarossa*, the junction of the two faces of the epinotum is also rectangular, the declivity being sometimes excavated or concave from above to below, so that its brow appears to overhang the rest of its surface. In most cases the petiole has a scale, in a few it is nodiform. A distinct ♀ media caste does not seem to occur. The right of *Barbarossa* to a place in this sub-genus, as defined by its author, appears to me to be exceedingly doubtful. The epinotum is not marginate, nor do the sides and declivity meet the dorsal face in a rectangle. If the definition of the sub-genus may be widened so as to embrace this species, then it would be quite as legitimate to include *Dofleini* Forel, within its limits. But that species, although clearly related to *Mayri*, is nevertheless placed by Forel in the sub-genus *Myrmosphincta*. On the other hand, one might transfer *Barbarossa* to the latter sub-genus. I have adopted the former course, since *Barbarossa*, notwithstanding the structure of its epinotum, is clearly allied to *vividus*, and also because the sub-genus *Myrmosphincta* appears to me to be ill defined or too artificial, (e.g. *C. intrepidus* Kirby, which is placed by Forel in that sub-genus, has the thorax no more strongly excised, *échancré*, between the meso- and epinotum than have many species of the sub-genera *Myrmoturba* and *Myrmosericus*).

Key to the species of Orthonotomyrmex, 2♂ and ♀.

- (12) 1. Dorsum of the epinotum quadrilateral and rectangular, or nearly so, meeting the sides and declivity more or less rectangularly; the upper half, at least, of the sides and of the declivity vertical.
- (3) 2. Node of petiole one-third wider than epinotum, very coarsely rugose and dentate at the sides *scabrinodis*, Arnold.
- (2) 3. Node of petiole not wider than epinotum, not so coarsely sculptured and not dentate at the sides.
- (11) 4. Dorsum of epinotum clearly marginate on each side, or with its face more or less excavated and the lateral margins prominent; at least the head and thorax strongly and deeply reticulate-punctate.
- (8) 5. Petiole with a node, more or less cuboid.
- (7) 6. Abdomen with a dense, silky, dull bronzy-golden pubescence; dorsum of epinotum almost a parallelogram, excavated lengthwise, hardly wider behind than in front *sericeus*, Fab.

- (6) 7. Abdomen with a thin, not dense and whitish pubescence; dorsum of epinotum a trapezoid, at least one and a half times wider behind than at the base, not excavated *Mayri*, Forel.
- (5) 8. Petiole with a scale.
- (10) 9. Larger species, 2½, 8.5 mm. Dorsum of epinotum only slightly depressed in the middle of its apical margin; the latter rounded, the declivity flat from above to below *epinotalis*, Santschi.
- (9) 10. Smaller species, 2½, 6.2 mm. Dorsum of epinotum concave from side to side, its apical margin deeply emarginate in the middle, the declivity concave from above to below, so that its brow overhangs the lower part *Braunsi*, Mayr.
- (4) 11. Dorsum of epinotum less distinctly margined at the sides; sculpture of the head and thorax very finely reticulate-rugulose, shining *vividus*, Smith, race *reginae*, Forel.
- (1) 12. The junction of the dorsum of the epinotum with the sides and declivity rounded, the upper half of the sides and declivity not vertical.
- (14) 13. Dorsum of epinotum subquadrate; petiole with a scale; body more or less shining, the sculpture feeble, the clypeus unarmed *Barbarossa*, Emery, race *arminius*, var. *bicontracta*, Forel.
- (13) 14. Dorsum of epinotum subglobose; petiole with a node; body dull, sculpture very coarse; the anterior margin of the clypeus with 5 acute teeth *Dofleini*, Forel.

C. SERICEUS, Fab. (Plate IX, figs. 137, 137a).

Suppl. Ent. System, p. 279, ♂, 1798.

Mayr, Verh. Zool. Bot. Ges. Wien, vol. 16, p. 886, ♀, 1866.

Jerdon, (*F. cinerascens*), Madras Journ. Litt. Sc., vol. 17, p. 123, ♂, 1851.

2½, 8–10 mm. Black, basal third of the scape and the flagellum dark brownish red. Head and thorax dull, very sharply and evenly reticulate-punctate, the reticulations sharply defined, the dorsum of the epinotum less strongly sculptured than the rest of the thorax, the petiole dull and more or less coarsely reticulate-rugose, the abdomen slightly shining, transversely rugulose or shagreened, the sculpture somewhat masked by the pubescence. Pilosity pale yellowish, long, thin and erect, fairly sparse on the head, a little more plentiful on the thorax, more so on the petiole and abdomen, but nevertheless fairly sparse everywhere. Legs slightly shining, the middle and hind pairs with a dense, black and almost decumbent pilosity. Pubescence short and very scanty on the head, excepting the clypeus, and on the pro-mesonotum, fairly long and of a pale

golden colour on the clypeus and epinotum, abundant, longer and of a dull bronzy-golden colour on the abdomen. The anterior margin of the clypeus with a row of yellowish porrect bristles. Head as wide as, or a little wider behind than long, the sides fairly straight behind and convex and convergent in front, the posterior margin straight, not much narrowed in front. Median area of clypeus subquadrate, subcarinate, the anterior margin shallowly emarginate in the middle. There is a large pit-like depression on each side of the head just behind the lateral pieces of the clypeus. Mandibles 6-dentate, the posterior tooth very small, fairly dull, sharply striato-punctate. Eyes fairly large, placed for the greater part behind the middle. Scapes sparsely and finely punctured, extending just beyond the hind margin. Vestiges of 3 ocelli present in most specimens. Pro- and mesonotum very convex transversely, the latter not much narrowed behind, a little wider than long; both thoracic sutures well defined. Dorsum of epinotum subhorizontal, convex lengthwise, concave transversely especially on the apical half, parallel-sided, twice as long as wide, the apical margin moderately concave, thereby making the apical angles rather prominent or subdentate. The declivity fairly flat transversely, deeply concave from above to below, its lower half smooth and very shining. Node of petiole cuboid, the anterior face inclined slightly forwards and convex on its upper half, the posterior face flat and subvertical, the dorsal face subrectangular and one-third wider than long. Abdomen large, nearly circular in outline. Tibiae cylindrical, with a few setae below.

♀ minor, 6-8.2 mm. Flagellum and basal half of the scapes paler than in the 2♂. The epinotum and petiole more densely pubescent. The head is much more narrowed in front, subtrapezoidal, the posterior margin distinctly convex, the sides more convex than in the 2♂, as long as wide (excluding the mandibles). The clypeus is more sharply carinate, and its anterior margin less concave. The scapes extend beyond the hind margin of the head by one-fourth of their length. The node of the petiole is more globose, seen from above subcircular. Otherwise like the 2♂.

♀, 11 mm. Similar to the 2♂; head rounder, occiput transverse, thorax not compressed, the metathorax (i.e. epinotum) as in the ♀ of the typical *Camponotus*. Node thick but transverse, not globose; abdomen long and massive," (ex Bingham, "Ants of India," p. 376).

♂, 8.5 mm. Black, basal half of the scapes ferruginous, flagellum dark brown. Head and thorax dull, reticulate-punctate like the 2♂. Meta- and epinotum, petiole and abdomen shining, very finely and

superficially reticulate-rugulose. Head, sides of the thorax, petiole and abdomen with a sparse, thin, erect and whitish yellow pilosity. Pubescence of the same colour, absent from the disc of the mesonotum, from the scutellum and epinotum, scanty on the head and sides of the thorax, more abundant and of a pale golden colour on the abdomen, but much less plentiful than in the ♂ or ♀. Head of the usual form of this sex, a trifle wider across the eyes than long. Ocelli large, glassy, citron-yellow. The scapes extend beyond the hind margin by about half their length. Declivity of the epinotum subvertical, twice as long as the dorsum, their junction forming a wide arc. Node of petiole with an oblique anterior face which is wider than long, slightly concave from side to side above and flat below; the posterior face flat below and convex lengthwise above, the dorsal face rounded and emarginate in the middle. Wings hyaline, nervures ochreous, stigma brown.

S. Rhodesia, not rare. The nest is generally placed in grassy situations, and the single entrance is surmounted by a tube, about $1-1\frac{1}{2}$ inches high, made of interwoven pieces of grass and lined inside with a thin layer of pressed earth. The diameter of the tube is just large enough to permit the entry of one ant at a time. The purpose served by this tube is unknown to me; it may be made for the purpose of preventing certain kinds of predaceous insects from entering the nest. This species has a wide distribution, occurring over the greater part of the Ethiopian and Indian regions.

(S.A.M., R.M., G.A. colls.).

C. MAYRI, Forel. (Plate IX, fig. 138).

Bull. Soc. Vaud. Sc. Nat., vol. 16, p. 92, ♂, 1879.

♂, 9-10 mm. Black, basal third of the scapes ferruginous. Mandibles castaneous. Sculpture of the head and thorax, excepting the epinotum, like that of *sericeus* but less regular on the pronotum. The epinotum and petiole very coarsely and irregularly rugose. Abdomen finely, densely and deeply reticulate-punctate and dull. Clothed all over with a fine, decumbent, short and greyish pubescence, not hiding the sculpture. Pilosity greyish, longer and a little more abundant than in *sericeus*, especially on the pronotum, margin of the epinotal dorsum and on the petiole. Very similar to *sericeus*, from which it also differs as follows:—

The sides of the head are more convex, the posterior margin only

feebly convex. The median area of the clypeus is a good deal wider and its anterior margin is straight. The meso-epinotal suture is very deep, so that the dorsum of the epinotum has a short and subvertical basal face. The dorsum of the epinotum is flat and horizontal, trapezoidal, two-thirds wider at the apex than at the base, a trifle more than twice as long as wide at the base. The apical margin, seen from above, is almost straight or at the most only feebly indented in the middle, its lateral angles rounded and not dentate. Node of petiole subcuboid as in *sericeus*, but more or less trapezoidal when seen from above, the anterior margin and sides straight, the posterior margin widest and convex. Seen from the side, it is convex from front to back, not with a flattened and slanting dorsal face as in the other species. Otherwise like *sericeus*.

♀ minor, 8.3–9 mm. Like the ♂, but with the head more narrowed in front and the posterior margin fairly strongly convex.

Valdezia, Transvaal, (Berthoud); S. Rhodesia, common. Nesting in similar situations as *sericeus*, and having a tube of woven grass over the entrance as in that species.

(S.A.M., R.M., G.A. colls.).

Race LEDIEUI, Forel.

Rev. Suisse Zool., vol. 24, p. 444, ♀, 1916.

♀, 10 mm. Larger and above all more elongate than the type of the species. Head one-fifth longer than wide, the posterior margin strongly convex, not much wider behind the eyes than at the anterior sixth. Differs also from the type of the species by the scapes which are strongly dilated in the apical half, and by the fine yellowish pilosity, much more abundant on the body, oblique on the legs, (long and erect on the femora). The epinotum and node are also coarsely reticulate and of quite a different shape. The epinotum is not marginate; its dorsum is very convex and ends in a short, concave and smooth declivity, without forming an angle with the same. The node is as thick as it is high, convex above, very little wider than long, with its anterior and posterior faces subvertical, (slightly convex). This race differs from the race *sankisianus* Forel, chiefly in its sculpture, and also by the shape of the epinotum and the abundant pilosity. Otherwise like the type of the species, especially the fine, dull and reticulate-punctate sculpture.

Shiluvane, Transvaal, collected by M. Junod and received from the

Geneva Museum, a single specimen. This race almost merits specific rank."

This race is unknown to me in nature, but, judging by the description, it is astonishingly similar to *C. Dofleini* of the same author.

C. DOFLEINI, Forel. (Plate IX, fig. 146).

Sitzb. K. Bayer. Akad. Wiss., p. 291, ♂ minor, 1911.

♂ (or 2♀?), 9-10.2 mm. Black; mandibles and tarsi dark reddish brown. Pubescence greyish white, decumbent, fairly long and sparse, a little more plentiful on the head and sides of the thorax than elsewhere. Pilosity greyish white, erect, slightly curly and abundant all over, oblique on the legs. Dull, only the base of the abdomen very slightly shining. Sculpture much coarser than in *Mayri*. Head and pro-mesonotum very coarsely but evenly reticulate-punctate, epinotum and node very coarsely reticulate-rugose, the bottom of the deep pits between the rugae fairly shining. Abdomen reticulate-rugulose, fairly finely so, but nevertheless more coarsely than in *Mayri*. Legs and scapes reticulate, slightly shining, shallowly punctured. Head subquadrate, about one-fifth longer than wide and about one-fifth wider behind than in front, (much less narrowed in front than in *Mayri*), the sides feebly convex, the posterior margin straight or feebly convex, the posterior angles moderately rounded. Mandibles with 5 or 6 teeth, shining and strongly punctured. Clypeus subcarinate, its anterior margin convex and bearing in the middle five fairly sharp teeth which are as long as wide, the outermost teeth smaller than the inner three. Scares widened apically and strongly flattened, extending beyond the hind margin of the head by about one-sixth of their length. Thorax more elongate than in *Mayri*. Pronotum only one-fourth wider than long in the middle; pro-mesonotal suture sharply defined. Mesonotum less narrowed behind than in *Mayri*, as long as wide in front. Meso-epinotal suture very deep and shining. Epinotum, seen from the side, almost hemispherical; seen from above, the dorsum is subquadrate, rounded at the corners, a little wider behind than in front, and about one-fourth to one-third longer than wide. The smooth declivity is concave from above to below and only half as long as the dorsum. Node of petiole subglobose, slightly wider behind than in front, as long as its greatest width, seen from above, subcircular or ovate, convex above, the anterior and posterior faces subvertical, the latter twice as high as the anterior. Behind the node there is a distinct peduncle at least

one-third as long as the node itself. The node, excluding the posterior peduncle, is as high as long and highest behind, (not longer than high as stated in Forel's description). Abdomen globose. Tibiae cylindrical, with a few fine setae below.

Bothaville, O.F.S., and Lichtenburg, Transvaal, (Dr. H. Brauns).

The description given above is based on specimens kindly presented to me by Dr. Brauns. Forel has omitted to mention the dentate anterior margin of the clypeus, which, together with the hemispherical and outstanding epinotum and the posterior peduncle of the petiole, clearly distinguishes this peculiar insect from all our other species.

(R.M., G.A. colls.).

C. BRAUNSI, Mayr. (Plate IX, fig. 139).

Ann. K.K.N.H. Mus. Wien, vol. 10, p. 151, ♂, 1895.

" " " " " 16, p. 28, ♀, 1901.

Santschi, Voy. d'Alluaud et Jeannel, p. 135, ♀, 1914.

24, 5.5-6 mm. Black; tibiae, tarsi and mandibles dark reddish brown, the basal half or the whole of the scapes ferruginous. Scale nitidulous and transversely rugulose, the rest of the body closely, evenly and deeply reticulate-punctate all over * and dull, the punctures largest on the epinotum, much finer but still deep and sharp on the abdomen. The anterior half of the head has some large and shallow punctures superimposed. The abdomen has a microscopic, decumbent and exceedingly sparse pubescence, the apical margins of the segments have a few short, blunt, exerted and greyish hairs; the sides and brow of the declivity and the scale of the petiole (just behind the dorsal edge) with some long, coarse, pointed and white hairs like those of *niveosetosus*; otherwise glabrous.

Head subquadrate, a very little wider than long, the sides feebly convex, very little narrower in front than behind, the posterior margin straight, the posterior angles subrectangular and narrowly rounded. Clypeus a little wider than long, almost quadrate, flat transversely in front, feebly convex behind, the anterior margin straight. The scapes are arcuate over the basal half and extend very little beyond the hind margin of the head. Frontal carinae nearer together behind than they are to the outer margins of the head. Mandibles dull, shagreened, closely punctured, with 4 or 5 teeth. Eyes almost flat, placed behind the middle. Pro-mesonotum trape-

* A typical example of what German authors describe as "fingerhutartig punktiert," punctured like a thimble.

zoidal, very feebly convex above. The pronotum is twice as wide as long, its lateral margins acute, owing to the sides and dorsum meeting in a rectangle, the anterior angles or shoulders narrowly rounded. Pro-mesonotal suture distinct. Mesonotum subovate transversely, twice as wide in front as behind, nearly one-third wider than long. Meso-epinotal suture deep. Dorsum of epinotum subquadrate, a trifle longer than wide behind and a little wider there than at the base, its lateral margins slightly convex, concave transversely over its apical half, the apical margin deeply and arcuately emarginate in the middle; declivity concave from above to below, its brow overhanging the lower part, longer than the dorsum. Scale of petiole subcircular, wider than high, both faces equally convex, the dorsal edge fairly sharp, and feebly emarginate in the middle in the largest specimens. Abdomen almost circular in outline, very little longer than wide. Tibiae cylindrical, not setose below.

♂ minor, 4-4.5 mm. Like the 2♂, but with the head more narrowed in front, the posterior margin moderately convex. The shoulders of the pronotum more acute, rectangular. The dorsum of the epinotum very little longer.

“♀, 11.5 mm. The head is very similar to that of the 2♂. From each of the larger punctures arises a decumbent, whitish yellow, short and very shining pubescent hair; a similar pubescence also occurs on the back of the head, on the thorax and especially on the upper side of the abdomen. The anterior wings are 10.8 mm. long and of a yellowish brown colour.”

The ♀♀ from East Africa, described by Santschi, are smaller, 9.5-10 mm. long.

Plumtree, S. Rhodesia; crawling over the trunks of trees in the same slow and apparently aimless way as the species of *Cataulacus*, for which it might easily be mistaken at a first glance. Apparently a scarce insect, recorded from our region only from the locality cited above and from Delagoa Bay, (Dr. H. Brauns).

(R.M., G.A. colls.).

C. EPINOTALIS, Santschi.

Ann. Soc. Ent. France, vol. 84, p. 508, 2♂, ♀, 1916.

2♂, 8-8.5 mm. Black, the legs castaneous red, the tarsi, flagellum, mandibles and apical half of the scapes dark reddish brown, the basal half of the scapes dark red.

Very similar to *Braunsi* but larger, differing from it only as follows: The sculpture is everywhere a good deal finer, especially on the

dorsum of the epinotum which is very little more strongly sculptured than the rest of the thorax. The pilosity is whitish, longer and more abundant, especially on the abdomen. There are a few erect pilose hairs on the head and thorax (absent in *Braunsi*), and there are about three or four transverse rows of the same on each abdominal segment. At the base of the abdomen the hairs are as coarse as those on the epinotum and scale. The mandibles have 6 teeth. The scapes are a little longer and extend beyond the hind margin by as much as the length of the 1st joint of the flagellum. Dorsum of epinotum very slightly wider at the apex than at the base, almost square, the lateral margins tumid and not distinctly marginate, flat, feebly concave only near the apical margin which is feebly depressed in the middle; declivity subvertical, not concave but flat from above to below, its lower half shining, the brow rounded. Otherwise like *C. Braunsi*.

♂ minor, 6 mm. The head is less narrowed in front than in the ♀, subquadrate. The scapes extend beyond the hind margin by one-third of their length. The clypeus subcarinate. The pronotal shoulders much more distinct than in the ♀, or in the ♂ of *Braunsi*.

Victoria Falls. Nesting in hollow tree-trunks. A more agile insect than *Braunsi*.

(S.A.M., R.M., G.A. colls.).

C. SCABRINODIS, n. sp.

♂, 4.6–6 mm. Black; tibiae, tarsi and antennae ferruginous, the last two joints of the latter brownish, mandibles castaneous, the masticatory margins piceous. Pilosity greyish, fairly short; some of the hairs are thick and erect, these are more plentiful on the abdomen than elsewhere, but nevertheless are fairly sparse; the rest of the pilosity is decumbent and longer, and these are more abundant on the epinotum and petiole. A sparse and decumbent pubescence on the legs and antennae. Dull; head and pro-mesonotum strongly and regularly reticulate-punctate, the spaces between the reticulations wider than the latter, also more or less circular and pit-like and slightly shining. Abdomen, femora and tibiae very closely reticulate-punctate (like that of *C. Braunsi* Mayr); epinotum, excepting the declivity which is rugulose and shining, and dorsum of the node very coarsely reticulate-rugose, anterior and posterior faces of the node transversely reticulate rugulose. Head widest in the middle, one-third wider behind than in front, as wide as long, the sides and posterior margin moderately convex. Mandibles dull, strongly and sparsely

punctured, aciculate, 5-dentate. Clypeus moderately convex transversely, its anterior margin straight. The scapes extend back as far as the occipital margin. Frontal carinae sinuate. Eyes large and convex, placed behind the middle, as long as their distance from the

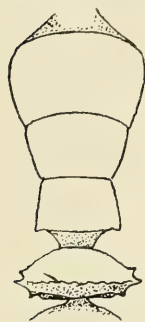


FIG. 59.

C. scabrinodis,
thorax and
petiole. $\times 16$.

hind margin of the head. Pronotum, excluding the neck, twice as wide as long in the middle, widest in front, moderately convex above, the shoulders rounded. Both thoracic sutures well defined. Mesonotum twice as wide in front as long, fairly flat above lengthwise. Dorsum of epinotum subquadrate, slightly wider behind than in front, one and a half times wider than long, the posterior margin straight or feebly convex; declivity longer than the dorsum, vertical in its upper half, concave below. Node of petiole one-third wider than the epinotum, twice as wide as long, seen from above, plano-convex in outline, the convex margin anterior, produced at the sides into several short teeth; seen from the side, the anterior face convex, the posterior face flat, higher

than long and not so high as the level of the epinotal dorsum. Tibiae cylindrical, not setose.

The smaller ♀♀ have slightly longer scapes and the dorsum of the epinotum more contracted at the base.

Sawmills, Umgusa River, S. Rhodesia.

The nest was situated in loose sandy soil and the entrance was surmounted by a tube of woven shreds of grass, hair and pieces of leaves, about $\frac{3}{4}$ inch high and $\frac{1}{4}$ inch in diameter.

Easily distinguished from the other species of the sub-genus by the sharper and wider reticulate puncturation and by the wide and spinose node.

(S.A.M., R.M., G.A. colls.; type in my collection).

C. VIVIDUS, Smith, race *REGINAE*, Forel.

Cat. Hymen. B.M. VI, p. 31, ♂ , 1858.

(syn. *C. Meinerti*, Forel, Ann. Soc. Ent. Belg., vol. 30, p. 191, 1886).

(race) Mitt. Schweiz. Ent. Ges., vol. 10, p. 307, $2\frac{1}{2}$, ♀ , 1901.

Rev. Zool. Afric., vol. 2, p. 346, 1913.

$2\frac{1}{2}$, 7-8.7 mm. Black, fairly shining all over. Head finely and superficially reticulate-rugulose at the sides and in front, chiefly

rugulose above and behind. Pro-mesonotum and abdomen finely and transversely rugulose. Dorsum of epinotum more strongly rugulose, almost undulate-striolate. The mandibles and anterior half of the head also sparsely and sharply punctured, the punctures small. Pro-mesonotum and abdomen with a few large and shallow piligerous punctures. Pilosity yellowish, long, erect and fairly coarse, scanty on the head, fairly abundant elsewhere, somewhat oblique and shorter on the apical half of the abdomen. Pubescence decumbent and very sparse, a little longer on the legs than elsewhere. Head subquadrate, as long as wide, slightly narrowed in front, but as wide at the anterior third as at the posterior margin, the sides feebly convex in the smaller 2½, straight over the posterior two-thirds in the larger, the posterior margin widely and rather deeply emarginate. Mandibles shining, 6-dentate, robust and fairly convex externally. Median area of clypeus flat, subquadrate, a little longer than wide, with a very short anterior lobe the margin of which is straight. Frontal carinae sinuate, as wide apart in the middle as they are long. The scapes reach the hind margin. Eyes feebly convex, placed at the posterior third. Pronotum twice as wide as long, the sides strongly convex, feebly convex above. Mesonotum transversely oval or subcircular, a little wider than long. Pro-mesonotal suture well defined, the meso-epinotal suture deep. Dorsum of epinotum rectangular, a little wider than long in the smaller 2½, two-thirds wider than long in the largest 2½, sloping slightly downwards behind, obtusely margined at the basal half of the sides; declivity vertical, twice as long as the dorsum, its junction with the latter rectangular, feebly rounded at the apex of the angle (when seen in profile). Scale of petiole thin, oval, the dorsal edge trenchant, feebly convex in front, flat behind. Tibiae feebly compressed, with a few setae below near the apex.

♂ minor, 4.8-7 mm. Posterior margin of the head straight, the sides more convex than in the 2½ and more narrowed in front. The scapes extend beyond the hind margin by about one-fifth of their length. The larger specimens (6-7 mm.) hardly form a distinct ♀ media caste; they have the posterior margin of the head feebly concave and the scapes a little shorter than in the smaller ♂♀. Otherwise like the 2½.

♀, 12.2 mm. (hitherto undescribed). Colour and sculpture as in the 2½. The pilosity on the abdomen is shorter, oblique and less abundant, limited to the apical margins of the segments. Head subquadrate, as long as wide behind, barely one-third wider behind than in front,

the sides straight, the posterior margin feebly concave in the middle, the posterior angles nearly rectangular. Mesonotum a little longer than wide, the scutellum not quite half the length of the mesonotum. Dorsum of epinotum hardly wider at the base than at the apex, two and two-third times wider than long; declivity one-third longer than the dorsum, vertical, its brow rounded. Scale as in the ♂. Wings hyaline, nervures and stigma ochreous. Otherwise like the ♂.

Nesting in hollow trunks and stems of trees, the communities exceedingly populous. The walls of the galleries in the nest are composed of a dark carton-like material, similar to that of the European *Lasius fuliginosus*, which species *reginae* also resembles in having the same sort of aromatic odour. A vicious species which emerges from its nest in hundreds on the slightest alarm, and bites fiercely.

Victoria Falls and Malindi, S. Rhodesia.

(S.A.M., R.M., G.A. colls. ; type of ♀ in my collection).

C. BARBAROSSA, Emery, race ARMINIUS, Forel.

(race) Ann. Soc. Ent. Belg., vol. 54, p. 457, ♂, ♀, 1910.

“♂, 5–9 mm.

♂. Clypeus wider and shorter than in the type of the species, grooved along its whole length by a median longitudinal groove, in place of the usual carina, (the type species has no groove). Head slightly shorter, the sides a little more convex. Meso-epinotal suture much stronger and deeper, exactly as in *Meinerti* (= *vividus* Smith). Dorsum of the epinotum a little more distinctly marginate than in the type of *Barbarossa*, but less than in *Meinerti*, one and a half times longer than wide, as in the type of the species. The angle of junction between the dorsum and declivity is more obtuse, less distinct than in the type. Sculpture of the front of the head as in the type, the large pit-like punctures more distinct and deeper, but the fundamental reticulate-punctate sculpture is less dull, more superficial, more or less subopaque on the whole head and on the thorax. The fulvous pilosity brilliant, as in the typical *Barbarossa*, but much less abundant, on the head as well as on the abdomen; the pubescence on the latter is much shorter and scantier. Otherwise like the type of the species.

♀ minor. Clypeus carinate. The differences between it and the type species less accentuated than in the ♂, excepting the pubescence. No large foveae on the head.

Delagoa, (Dr. Liengme). This form is somewhat transitional between *Barbarossa* and *Meinerti*."

Race ARMINIUS, var. BICONTRACTA, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p 256, 24, ♀, 1914.

"♀, 6.5–8.4 mm. Much smaller and less dimorphic than the type of the race. It differs from it also by its deeply impressed pro-mesonotal suture, which in profile forms an emargination hardly less deep than that of the meso-epinotal. The head of the ♀ major is not so large, and is more narrowed in front than in *Arminius* s. str., with which it is otherwise identical."

The above description is not entirely correct, owing to the fact that the largest ♀♀ or 24 24 were not sent to Dr. Forel for examination. A fuller description of all the forms is therefore added herewith.

24, 10 mm. Black, the apical margins of the abdominal segments testaceous. Very similar to *vividus-reginae*, differing from it as follows:—Head more reticulate-rugulose; head and thorax almost dull, the abdomen only slightly shining. Pubescence and pilosity fulvous, the pilosity much more abundant, especially on the abdomen and anterior half of the head. The latter is very abundantly pilose, the hairs being erect and inserted in large pit-like punctures. The scapes barely reach the hind margin of the head. The median area of the clypeus is longer than wide, distinctly narrower in front than behind, not lobate in front, shallowly and longitudinally grooved in the middle, feebly depressed behind the straight anterior margin. Mandibles very finely reticulate and dull over the basal half, slightly shining over the anterior half, fairly strongly punctured. They are inserted at an appreciable distance from the corners of the anterior margin of the head, as in some species of *Myrmamblys*. The eyes are placed behind the middle of the sides. The head is one-sixth longer than wide, not much wider behind than in front, the sides straight over their middle three-fifths, the posterior margin shallowly concave. The sides and declivity of the epinotum not vertical but oblique, (nevertheless fairly steep), and, in consequence, the junction of those surfaces with the dorsal surface is not rectangular as in *reginae*, but rounded. The dorsum is convex transversely, feebly so longitudinally, longer than wide. The declivity is as long as the dorsum, their junction widely rounded. The scale is a little thicker, less convex at the sides than in *reginae*, the summit feebly emarginate. Tibiae much more compressed than in *reginae*.

♂ media, 7.5–8.5 mm. These are the forms erroneously described by Forel as the ♀ major or 2♂. They resemble the 2♂ in pilosity, pubescence and sculpture, but the large pit-like punctures and the pilosity arising from them on the front of the head are less plentiful. The head is not like that of the 2♂, but resembles that of the 2♂ of *reginae*, having, however, the posterior margin straight or very feebly convex. The median area of the clypeus is wider, quite as wide as long, and without the median groove. The scapes reach a little beyond the hind margin. The scale is like that of the 2♂. Mandibles longer, more feebly punctured, less opaque on the basal half.

♂ minor, 5.5–6.2 mm. Like the ♂ media in sculpture and pilosity, particularly of the head. The posterior margin of the head straight. The scapes extend beyond the hind margin by two-fifths of their length. Otherwise like the ♂ media.

Durban, climbing about on trees.

(S.A.M., R.M., G.A. colls.).

SUB-GENUS MYRMOSPHINCTA, Forel.

For characters see table of sub-genera.

C. SCALARIS, Forel. (Plate IX, fig. 145).

Mitt. Schweiz. Ent. Ges., vol. 10, p. 308, 2♂, ♀, ♀, 1901.

2♂, 7–8.2 mm. Black; legs, antennae, mandibles and anterior margin of the head dark red, the tarsi brownish red. Dull, the abdomen moderately shining. Very closely and finely reticulate-punctate, (the reticulations closer and the punctures much smaller and shallower than in *C. epinotalis* Santschi), the extreme posterior angles of the head rugulose and slightly shining. Abdomen very finely rugulose and partly reticulate-punctate. Legs delicately reticulate and feebly shining. Pilosity greyish yellow, very sparse on the head and thorax, a little more plentiful on the abdomen, the hairs on the epinotum and edge of the scale thicker and longer than elsewhere. A feeble and decumbent pubescence present only on the legs and antennae. Head, excluding the mandibles, subtrapezoidal, wider than long, a good deal wider behind than in front, the posterior margin straight, the posterior angles moderately rounded. Mandibles nitidulous, very finely reticulate or shagreened, abundantly and strongly punctured, 7-dentate. Median area of clypeus not carinate, very slightly convex transversely, a little wider than long, feebly

lobate in front, the anterior margin straight, the lateral pieces triangular, well defined and not small. Frontal carinae not very divergent. The scapes extend beyond the hind margin. Eyes placed at the posterior third. Pro-mesonotal suture distinct. The dorsum of the pronotum and the mesonotum form an even convexity in profile as far as the middle of the mesonotum, the posterior half of the latter is steeper and forms an oblique declivity. The meso-epinotal suture fairly deep. The dorsum of the epinotum lies much lower than the mesonotum, and is placed step-like below it (see fig. 145). It is very convex transversely, subhorizontal lengthwise, as long as the oblique declivity and joining the same in a low curve. The scale of the petiole is moderately convex in front, flat behind, the dorsal edge obtuse and slightly emarginate in the middle. Tibiae nearly cylindrical, not setose below.

♂ minor, 4.7-6 mm. Only the anterior corners and the extreme apical margin of the clypeus reddish. The posterior margin of the head slightly convex, the sides straighter than in the ♀. The declivity of the mesonotum less distinct, but the step-like shape of the thorax is even more pronounced than in the ♀ owing to the dorsum of the epinotum being more convex lengthwise and rising a little posteriorly. The dorsum is also narrower than in the ♀ and more convex transversely. Otherwise like the ♀.

“♀, 9 mm. Wings feebly tinged with yellow, with yellow nervures and brown stigma. Otherwise like the ♀.”

Natal, 6,000 ft. (Haviland).

(R.M., G.A. colls., ex Natal Museum coll.).

SUB-GENUS MYRMOTREMA, Forel.

For characters see table of sub-genera.

The fundamental sculpture on the head and thorax of the ♀ and ♂ usually consists of a fine reticulate-punctuation, appearing under a low magnification more or less granulate. Some species, however, are finely rugulose like the *Myrmoturba* sub-genus. In all the ♀♀ the anterior part of the head has numerous pubescent, pit-like punctures superimposed, which are plainly visible under even a low magnification. *C. Barbarossa* of the preceding sub-genus also has the anterior part of the head pitted, but it is not likely to be mistaken for a species of *Myrmotrema*, since the pits are densely pilose (not pubescent), and because the epinotum is more or less cuboid. The

epinotum in this sub-genus resembles that of *Myrmoturba*, but the dorsum is wide and never ridge-like or cristate, the sides being more oblique. The declivity is usually clearly delimited from the dorsum, which is rarely the case in *Myrmoturba*. In both the ♂ and ♀, the pubescence is very characteristic, being long, generally decumbent and silky, and often golden or silvery. The head is nearly always triangular (including the closed mandibles), the sides usually convex. All our species are arboricolous, nesting in hollow trunks and stems. As most of the species are unknown to me in nature, I have been limited to citing the original descriptions, which are unfortunately not so much detailed diagnoses as lists of differences between one form and another.

The sub-genus has recently been reviewed by Dr. Santschi (Ann. Soc. Ent. France, vol. 84, pp. 266-278, 1915), and the following key to the species is largely based on the one which is presented in that paper.

Key to the species of Myrmotrema, ♂.

- (4) 1. Head and thorax brownish red; dorsum of the epinotum, at least in the ♂, broad, fairly horizontal lengthwise.
- (3) 2. Abdomen black and very shining
Robecchi, Emery, race *rhodesiana*, Forel.
- (2) 3. Abdomen brownish red, fairly dull
Robecchi, Emery, race *troglodytes*, Forel.
- (1) 4. Head and thorax (and abdomen) black; dorsum of epinotum narrower, oblique.
- (10) 5. Pit-like punctures on the head confluent, much larger than the intervals between them; the pubescence arising from them long, as abundant and as long as the pubescence on the abdomen.
- (9) 6. The pubescence on the cheeks not quite decumbent but oblique, as long or nearly as long as the apical width of the scape.
- (8) 7. Tibiae brownish black. Dorsum of epinotum slightly convex
auropubens, Forel.
- (7) 8. Tibiae reddish. Dorsum of epinotum straight. Mesonotum of the ♀ dull
auropubens, var. *Absalon*, Santschi.
- (6) 9. Pubescence shorter and decumbent
auropubens, var. *Jacob*, Santschi.
- (5) 10. Pit-like punctures on the head smaller than the intervals between them, not deep, the pubescence arising from them very short or even absent.
- (16) 11. Abdomen dull, densely punctured. Pubescence generally fairly long.
- (15) 12. A glabrous median longitudinal line on the abdomen of the ♂, sometimes indistinct in the ♀.
- (14) 13. ♂, The scape extends beyond the hind margin by not more than the length of the 1st joint of the flagellum; pubescence brassy-golden, greyish on the head in the ♀ minor *postoculatus*, Forel.

- (13) 14. Scapes longer. Pubescence very pale, golden or silvery
Grandidieri, Forel, race *mendax*, Emery.
- (12) 15. No glabrous line present on the abdomen in the 2♂. Dorsum of the epinotum triangular, much narrowed at the base; antennae and legs red *Grandidieri*, var. *Rollei*, Forel.
- (11) 16. Abdomen shining or subopaque, in greater part finely reticulate-coriaceous. Pubescence generally short and more sparsely distributed.
- (22) 17. The two faces of the epinotum meet in a distinct angle, the apex of which may sometimes be rounded; no glabrous median line on the abdomen.
- (19) 18. The erect pilosity on the abdomen as fine as the pubescence
Olivieri, Forel, var. *tenuipilis*, Em.
- (18) 19. The erect pilosity coarser than the pubescence.
- (21) 20. More robust. Edge of scale rounded; legs black; the pubescence slightly yellowish *Olivieri*, var. *delagoensis*, Forel.
- (20) 21. Slender; edge of scale more trenchant; legs brown; pubescence white
Olivieri, race *tauricollis*, Forel.
- (17) 22. The two faces of the epinotum meet in an arc, subangularly only in the largest 2♂ 2♂. A fairly distinct median glabrous line on the abdomen, which is very shining *Olivieri*, race *infelix*, Forel.

Dr. Santschi has transposed to *C. Olivieri* several of the races and varieties which were named for me by Dr. Forel as belonging to *C. foraminosus*, and has also made some other minor alterations in the classification. These will be made apparent in the synonymy under the title of each species.

C. ROBECCHII, Emery, race *RHODESIANA*, Forel.

(Plate IX, figs. 135, 135a).

Ann. Mus. Civ. Gen., vol. 32, p. 120, ♀, 1892.

(race, as var. of *trogodytes*, sp.) Ann. Soc. Ent. Belg., vol. 57,
p. 145, 2♂, 1913.

Santschi, Ann. Soc. Ent. France, vol. 84, p. 271, 1915.

2♂, 7.2-9 mm. Head, thorax and legs dark brick-red (burnt sienna), tarsi and petiole brownish red, abdomen black. Head and thorax subopaque, the legs and petiole slightly, the abdomen very shining. Head and thorax finely reticulate-punctate, the larger superimposed punctures are seen under a high magnification to consist of three contiguous round pits. They are almost obsolete on the clypeus, and become shallower towards the back of the head. The epinotum is more reticulate-rugulose than reticulate-punctate. Scale feebly rugulose, the abdomen transversely and finely so. On the body the

pubescence is exceedingly fine, short and scanty, except on the lower part of the sides of the thorax and on the coxae where it is long, adjacent and silky. Legs with longer and more abundant pubescence than the dorsum of the thorax. Pilosity on the margins of the abdominal segments whitish, very short and thin, yellowish and much longer on the declivity and scale. Head as long as wide, nearly twice as wide at its widest point (posterior third) as at the anterior margin, the sides fairly convex, the posterior margin straight. Median area of clypeus oblong, a little longer than wide, the anterior margin straight. Frontal carinae as long as their greatest distance apart. The scapes extend beyond the hind margin by twice their apical width. Eyes placed at the posterior third. Mandibles shagreened, subopaque, strongly punctured, 6-dentate. Pronotum twice as wide as long, the shoulders subangular. Mesonotum one and a half times wider than long, transversely oval. Both sutures strong. Epinotum somewhat compressed, but with a distinct dorsal face which lies at a lower level than the mesonotum and is horizontal lengthwise, at least over its basal half. It joins the longer and subvertical declivity in a rapid curve, or (even in examples from the same nest) sub-rectangularly. The declivity is feebly concave from above to below. Scale subovate, widest below the middle, the edge fairly trenchant, the anterior face feebly convex, the posterior face flat. Abdomen globose, a little longer than wide. Tibiae cylindrical, not setose below.

♀ minor, 4.2-5.3 mm. Head one-seventh longer than wide, widest across the eyes, and not more than one-third wider there than at the anterior margin; the posterior margin moderately convex. Head without the large punctures present in the ♂. Clypeus wider than long, subcarinate, the anterior margin moderately convex. The scapes extend beyond the hind margin by about one-fourth of their length. In the smallest ♂♀ the disc of the pronotum is rather flattened. The epinotum is more distinctly compressed, so that the posterior half of the dorsum is sharply cristate and linear when seen from above. Otherwise like the ♂.

♀, 10 mm. (hitherto undescribed). Colour, sculpture, pilosity and pubescence as in the ♂, but the thorax is darker as a rule, more brownish red. The mesonotum and scutellum are also very shallowly and sparsely punctured in addition to the fundamental sculpture. Head subquadrate, not much narrower in front than behind, the posterior margin feebly convex, the sides less convex than in the ♂. Abdomen transversely reticulate-rugulose and feebly shining, (in

a specimen from the Victoria Falls, the abdomen is dull and finely reticulate-punctate). Wings tinged with yellowish brown, nervures brown, stigma piceous.

S. Rhodesia; fairly common wherever there is large timber. This species has a very offensive and powerful cockroach odour. The smaller ♂♂ are not uncommonly seen climbing the trunks of trees in company with *Cremastogaster castanea*, race *rufonigra* Em., to which they bear a strong resemblance to the naked eye.

(S.A.M., R.M., G.A. colls.; type of ♀ in my collection).

ROBECCHII, race TROGLODYTES, Forel.

(as species) Mitt. Schweiz. Ent. Ges., vol. 9, p. 68, ♂, 1894.

♂, 7-9 mm. Yellowish brick-red, the last three abdominal segments becoming gradually darker or reddish brown towards the apex, tibiae and anterior margin of the head dark reddish brown. The fundamental sculpture like that of race *rhodesiana* but distinctly stronger, the punctures and reticulations more sharply defined. On the other hand, the large pit-like punctures on the head are smaller and shallower. The pubescence is a little more abundant and longer on the abdomen, and the pilosity much longer and more plentiful. The meso-epinotal suture is much shallower than in *rhodesiana*, and the convexity of the dorsum of the thorax is continuous, the dorsum of the epinotum not lying at a lower level than the mesonotum. Abdomen very finely reticulate-punctate and dull, the basal fourth of the 2nd and following segments transversely rugulose and slightly shining. There is a median longitudinal line which is glabrous, but rather indistinct since the rest of the abdomen is not plentifully pubescent. Otherwise like *rhodesiana*.

♂ media and minor. These differ from their ♂ in the same way as they do in *rhodesiana*. The smallest ♂♂ have the pale colour extending further back on the abdomen, i.e. to the middle of the 3rd segment.

♀, 10.5 mm. (hitherto undescribed). Sculpture, pilosity and pubescence as in the ♂. Colour similar but darker all over, the posterior half of the thorax darker than the anterior, or reddish brown; abdomen very dark brownish red, or brown on the basal third and the rest blackish brown, the apex black. Sculpture of the abdomen stronger than in the ♂, the basal half of the 2nd and following segments slightly shining and transversely striolate, the 1st segment and apical halves of the other segments sharply reticulate-punctate and dull. Otherwise like the ♀ of *rhodesiana*.

♂, 7·5–8 mm. (hitherto undescribed). Head, pro-mesonotum and scutellum reddish ochreous; epinotum, petiole and 1st segment of the abdomen, the femora and flagellum dirty ochreous, the rest of the abdomen, the tibiae, tarsi and scapes more or less yellowish brown. Sides of epinotum, petiole and abdomen with a long, erect and pale brownish pilosity, fairly abundant, the rest of the body with only a hair here and there. Abdomen and legs with a sparse, decumbent pubescence. Head, pro-mesonotum and scutellum reticulate-punctate and dull, the rest of the body superficially rugulose and shining. Head rather long, clearly longer than wide across the eyes, the posterior two-thirds, seen from above, trapezoidal, the posterior margin narrow and straight, the sides in front of the eyes parallel. Scares long, extending beyond the hind margin by two-thirds of their length. The dorsal profile of the epinotum forms a low and continuous convexity. The scale is wider above than below, the anterior and somewhat oblique face subquadrate and flat, the posterior face convex from side to side and vertically, the summit shallowly emarginate in the middle. Wings tinged with yellowish brown, nervures and stigma pale brown.

Nesting under the bark of a rotten tree, Stella Bush, Durban. The larvae and ♀♀ of *Cremastogaster tricolor*, var. *durbanensis* Forel, were found in the same spot without any distinct boundaries between the nests of the two species. The latter did not attack each other when the nests were disturbed.

(S.A.M., R.M., G.A. colls.; type of ♀ and ♂ in my collection).

C. AUROPUBENS, Forel.

(as race of *C. foraminosus*) Mitt. Schweiz. Ent. Ges., vol. 9,
p. 67, ♀, ♂, 1894.

Santschi emend., *loc. cit.*, pp. 267 and 274–5.

“Like *Grandidieri*, but as much as 9 mm. long. The large pits on the head very close, becoming almost a reticulation on the cheeks. The whole body with a long, strong and bright golden pubescence, which, although it allows the sculpture to be seen through it, is nevertheless much longer and more abundant than in *Grandidieri*. Black; antennae, mandibles and anterior margin of the head dark red. The coarse pits on the head disappear at its posterior end. The middle of the nitidulous and very sparsely punctured abdomen has a glabrous longitudinal line which is impunctate.”

Delagoa Bay, (Dr. Liengme); Stamford Hill, Natal, (Traegaardh).

According to Santschi's key, *Grandidieri* s. str. is limited to Madagascar. It is, like *foraminosus*, distinct from *auropubens* by having fewer pits on the head, which are smaller than the intervals between them.

AUROPUBENS, var. *ABSALON*, Santschi.

Loc. cit., pp. 267 and 274, ♂, ♀.

"5.5-9.5 mm. Very close to the type from which it differs by the red or brownish red tibiae, (black or slightly brownish black in the type). The dorsum of the epinotum is straight, the angle which it forms with the declivity being less open than in *auropubens*, in which the dorsum of the epinotum is also a little convex. The pubescence of the cheeks is as long and as much exerted as in *auropubens*—that is, the hairs are as long as the width of the apex of the scape, and as long as those on the abdomen.

♀, 10 mm. Head trapezoidal, longer than wide, about one-fourth narrower in front, the sides and the posterior margin straight, the angles rounded. Mesonotum dull like the rest of the thorax. Scale high and thin, obtuse at the summit. Wings tinged with brownish yellow, nervures and stigma brown. The anterior wing 12 mm. long.

Natal, (Traegaardh). Hitherto confused with the type of the species, as was also the following variety."

AUROPUBENS, var. *JACOB*, Santschi.

Loc. cit., pp. 267 and 275, ♂, ♀.

"Differs from the type and from the variety *Absalon* by having the pubescence on the cheeks entirely decumbent, although they extend beyond the pits. It is also shorter, the hairs being shorter than the apical width of the scape. The pubescence on the abdomen is also shorter and less plentiful. The tibiae are reddish like the antennae and mandibles. The pits on the head are hardly less large than in the type, but much larger than in *Grandidieri*, Forel, and more confluent; the cheeks dull. Mozambique, Pungwe Valley, (Vasse); Bulawayo, Rhodesia, (Arnold).

C. auropubens has the pit-like puncturation so different from that of the other *Myrmotrema* that I believe it may be considered as a species distinct from *Grandidieri*, to which it is the nearest allied."

♂, 7.3-10 mm. ♀ media, 6.8 mm. ♀ minor, 5-5.5 mm.

In the 2♂, the antennae are yellowish red, in the ♀ somewhat brighter. The pilosity is white, fairly scanty on the pro-mesonotum, limited on the head to the frons and middle of the vertex, more abundant, longer and coarser on the epinotum, scale and abdomen. The hairs on the epinotum and scale thick and bristly. In the ♀ minor the pilosity on the abdomen is more plentiful than in the 2♂ and ♀ media.

♀, 10.3 mm. (hitherto undescribed). Scapes bright reddish ochreous as in the ♀ minor, mandibles bright ferruginous, otherwise like the 2♂ in colour, sculpture, pilosity and pubescence. The posterior margin of the head is straight (concave in the 2♂), the sides less convex than in the 2♂. The shoulders of the pronotum are subangular and clearly visible from above. Lower half of the declivity of the epinotum shining, the corners on each side with a dense and silvery pubescence. Wings tinged with brownish yellow, nervures and stigma brown.

This variety had been named for me by Dr. Forel as *C. foraminosus*, race *Grandidieri*. It is a common species, forming its nest most frequently in hollow stems of *Acacia horrida* and *Sclerocarya caffra*.

(S.A.M., R.M., G.A. colls. ; type of ♀ in my collection).

C. POSTOCULATUS, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 254, 2♂, ♀, 1914.

2♂, 9.6–11.6 mm. Black; flagelum dark brown, apical half of the mandibles sometimes ferruginous, last four tarsal joints reddish brown. Dull. Head reticulate-rugulose, distinctly and rather coarsely reticulate-punctate between the eyes and frontal carinae, the pit-like punctures on the cheeks much shallower and smaller than in *europubens* and its varieties or in *foraminosus* and *Olivieri*, here and there almost effaced. Thorax closely reticulate-punctate, the declivity, scale and legs only reticulate, but the latter also with a fine and sparse puncturation. Abdomen very finely and closely reticulate-punctate or granulate. From the pits on the head arise microscopic pubescent hairs, otherwise the head is almost without any pubescence. On the thorax the pubescence is pale golden, long, decumbent and fairly abundant. On the abdomen it is much longer, more plentiful and of a brassy-golden colour. Pilosity whitish, thick and pointed (not blunt at the ends as described by Forel). Head feebly trapezoidal, very little narrowed in front, as long as wide, the posterior margin straight, (feebly concave in the smaller examples), the sides straight in the middle and feebly convex in front

end behind, the posterior margin about half as wide again as the anterior. The scapes extend beyond the hind margin of the head by one-seventh of their length (by a little more in the smaller ♂, but not by as much as two-fifths as described by Forel). Median area of clypeus longer than wide, feebly carinate, the anterior margin straight. Mandibles dull, very finely reticulate, sparsely and finely punctured, 6-dentate. Pronotum with obtuse but fairly distinct shoulders. Mesonotum very convex transversely. Dorsum of epinotum narrow, almost cristate, much shorter than the declivity which it joins in a wide angle. The median glabrous area on the abdomen very distinct. All the femora strongly compressed, tibiae cylindrical, not setose below.

In all the specimens before me, (collected at the same time and place as the types of Forel), the eyes are separated from the posterior margin by a distance as great as their own length, not as one-third of their diameter as stated by Forel. Neither are the scapes "almost as slender at the apex as at the base."

♀ media, 8.2 mm. Head trapezoidal, longer than wide. Anterior half or more of the pronotum flat, thereby making the shoulders appear sharper and the lateral margins more clearly defined; it slopes more steeply downwards and forwards than in the ♂, but, like the latter, the dorsal profile of the meso-epinotum is almost horizontal and straight.

♀ minor, 6.2-7 mm. These differ from both the ♂ and ♀ media in having the front of the head as far as the eyes, and the cheeks below the eyes as far as the posterior angles, clothed with a whitish, oblique and very long pubescence (almost pilose). It should be noted that the degree of abundance of the pilosity in this sub-genus is not a character on which much reliance can be placed, since the hairs are very easily rubbed off, especially the bristly hairs.

Durban.

(S.A.M., R.M., G.A. colls.).

C. GRANDIDIERI, Forel.

C.R. Soc. Ent. Belg., p. 103, ♂, ♀, 1886.

The type of the species is confined to Madagascar. The description is included here in order to make the diagnoses of its African forms somewhat clearer.

“♂, 5-8.2 mm. This species, allied to *foraminosus* Forel, has the general facies of *C. novogranadensis* Mayr, but differs from it by the

triangular shape of the head and by its wider epinotum, which make it resemble the sub-genus *Colobopsis* a good deal less. . . . Head triangular, the sides rounded. Mandibles short, thick, pilose, with 6 or 7 teeth, with large deep punctures and very finely reticulate-striate between the punctures. Clypeus almost rectangular, nearly parallel-sided, not carinate, prolonged in front into a very short rectangular lobe, emarginate on each side of the lobe, the middle of the anterior margin entire. Thorax strongly arched, especially in front. Abdomen fairly large. Thorax, abdomen, frons, vertex, clypeus and antennal pits (also the cheeks in the ♀ minor) reticulate-punctate; the puncturation extremely dense, the bottom of the punctures microscopically granulate. Legs and antennae (also the cheeks in the ♂) very finely reticulate. Scale and declivity of the epinotum finely punctate-rugulose transversely. On the head there are some large piligerous punctures; these become, in the ♂, large round pits which are strongly reticulate-punctate at the bottom and have a decumbent hair inserted in the middle. These pits give a peculiar carious appearance to the sculpture. The whole body is covered with a coarse, silvery pubescence, fairly short, but longer on the abdomen, and not very dense, . . . the antennae and legs have a finer pubescence. Some white, erect, thick and obtuse hairs are dispersed over the body, especially on the margin of the scale and on the abdominal segments. Tibiae and scapes without erect hairs. Black, dull. Antennae (except the end of the flagellum), tibiae, tarsi, part of the femora and mandibles (except the teeth in the ♂) reddish. In the ♂ the anterior margin of the clypeus and cheeks also reddish.

GRANDIDIERI, race MENDAX, Emery.

Ann. Soc. Ent. France, vol. 63, p. 54, ♀ minor, 1895.

Santschi emend., *loc. cit.*, p. 274, ♀ media.

"♀ minor, 4.5 mm. In form and sculpture this imitates *Grandidieri* exactly. The shape of the thorax as in *Olivieri*. The head is more elongate than in *Grandidieri*; the scape extends beyond the occiput by one-third of its length. Colour black; mandibles and antennae rusty red. Hamman's Kraal, (Simon)."

The ♀ minor has no glabrous median line on the abdomen, but according to Santschi, the line is fairly distinct in the ♀ media. This race is also found in Natal.

GRANDIDIERI, race RUSPOLII, Forel, var. ROLLEI, Forel.

(as race of *foraminosus*) Mitt. Schweiz. Ent. Ges., vol. 8, p. 349,
♂, ♀, 1892.

(variety) Zool. Jahrb. Syst., vol. 29, p. 270, ♂ major, 1910.

"♂, 6.4–6.8 mm. Scale higher and more convex transversely than in the typical *Ruspolii*. The blunt, bristly, white hairs more plentiful, especially on the abdomen. The latter with a sparse silvery pubescence, as in *Grandidieri*, and with a glabrous median longitudinal line. Pit-like punctures on the head as in the type, feeble or absent posteriorly. Thorax short, very wide in front, narrowed to a point behind. The dorsum of the epinotum is straight and much shorter than the declivity. Black, dull; antennae, legs and mandibles bright red; cheeks in front reddish. Otherwise just like *Ruspolii*."

Zoutpansberg, Transvaal, (Rolle).

C. OLIVIERI, Forel.

Ann. Soc. Ent. Belg., vol. 30, p. 175, ♂, ♀, 1886.

The type of the species is West African, (Angola). It is represented in our region by four forms which, like the type, have the abdomen shining, feebly rugulose and very sparsely pubescent.

OLIVIERI, var. TENUIPILIS, Emery.

Ann. Soc. Ent. France, vol. 63, p. 54, 1895.

"Differs from the type of the species by the erect hairs on the abdomen being much finer, not thicker, or even a little thinner than the decumbent pubescence; the latter are, however, thicker and whiter than in *Olivieri*." Pretoria, (Simon).

OLIVIERI, var. DELAGOENSIS, Forel.

(as race of *foraminosus*) Mitt. Schweiz. Ent. Ges., vol. 9, p. 68,
♂, ♀, 1894.

"♂, 7.5–9 mm. Very similar to *Olivieri* but somewhat larger. The pit-like punctures on the head remain sharply defined and large right up to the posterior margin. Pronotum rounder and convex, hardly

pentagonal like that of *Grandidieri*, but longer and narrower. Dorsum of the epinotum nearly as long as the declivity and less sharply delimited from it. Scale somewhat thicker. Pubescence scantier. Otherwise just like *Olivieri*.

♀ minor. Excepting the large punctures, showing the same differences to *Olivieri* as the ♂.

Delagoa Bay, (Berthoud, Liengme).

OLIVIERI, race INFELIX, Forel.

(as var. of *foraminosus*, race *lemma*) Bull. Soc. Vaud. Sc. Nat.; vol. 50, p. 254, ♂, ♀, 1914.

Santschi emend., *loc cit.*, p. 270.

♂, 8.9 mm. Black; basal third of the scapes ferruginous; tarsi, mandibles and flagellum brownish red. Sculpture of head and thorax as in *postoculatus*, but the pit-like punctures on the head are larger and deeper; the abdomen is microscopically rugulose transversely, shining, and also very shallowly and sparsely punctured.

On the cheeks the large punctures occur as far back as the posterior angles, and on the clypeus they are exceedingly shallow (not absent from those two areas as stated in Forel's description). The pubescence is whitish to pale golden, decumbent, exceedingly short and scanty on the body, a little more abundant on the scapes and legs. The pilosity is dirty white or yellowish white and not very plentiful, much less so than in *auropubens* and its varieties. The femora are fairly closely and shallowly punctured. The scapes extend beyond the hind margin by a distance equal to their apical width. Mandibles moderately shining, strongly punctured. The pronotum is feebly convex above, or almost flat, with rounded but distinct shoulders. The dorsum of the epinotum is twice as long as wide at the base, flat, moderately oblique lengthwise, feebly convex transversely, clearly delimited from the sides. It joins the almost vertical and longer declivity in a very short curve.

♀ minor, 5.5–7 mm. Pilosity and pubescence even scantier than in the ♂. The scapes in the smallest examples extend beyond the hind margin by two-fifths of their length. The epinotum is more compressed than in the ♂, so that the dorsal face is merely an obtuse ridge as narrow at the base as at the apex. It is relatively longer than in the ♂.

Durban and Zululand.

(S.A.M., R.M., G.A. colls.).

OLIVIERI, race TAURICOLLIS, Forel.

(as race of *foraminosus*) *loc. cit.*, p. 68.

Santschi emend., *loc. cit.*, p. 270.

"4.3-6 mm. Very near to *Ruspolii* but shorter. Thorax very strongly arched lengthwise, with unusually wide pronotum, which has even sharper anterior angles. Dorsum of the epinotum narrower, almost tectiform, fairly convex and merging arcuately into the declivity. Scale convex above. The pits on the slightly shining head of the ♂ fairly shallow. Abdomen shining, feebly rugulose, sparsely punctured. In the ♀ minor the whole body is shining and feebly rugulose. Clypeus somewhat produced in front. Head and thorax of the ♂ reticulate-punctate. Black; antennae and ends of the tarsi brownish red; mandibles and legs dark brown. Scale and epinotum with white, thick and blunt hairs, which are sparse elsewhere. Pubescence very fine, short and scanty. Delagoa Bay, (Liengme)."

SUB-GENUS MYRMEPOMIS, Forel.

For characters see table of sub-genera.

Only one species belonging to this sub-genus occurs in our region, but it is split up into three races and two varieties. These may easily be recognised by the nature of the very abundant, oblique or almost decumbent pilosity on the abdomen, which is composed of very thick and blunt hairs. In cross-section these hairs are cylindrical or oblong. They more or less hide the sculpture. The anterior corners of the pronotum are either sharply margined and angular or subangular, or produced into a short tooth. The tibiae are strongly prismatic, the upper, inner and outer faces of which are deeply canaliculate. In habits the *fulvopilosus* group is distinctly arenicolous, yet strangely enough, these ants lack the ammochaetae which are found in other arenicolous species, such as *C. mystaceus* and the myrmicine *Ocymyrmex*.

The ♀ and ♂ are both large. The former is quite as long as the ♂, but has a narrower head. The head of the ♂ in some forms is very large.

Key to the fulvopilosus group, ♂, ♀.

- (4) 1. Head and thorax black.
- (3) 2. Pilosity of abdomen fulvous; the ♂ has a more or less distinct, small glabrous spot in the middle of the 2nd (sometimes also the 3rd) abdominal segment *fulvopilosus*, De Geer.

- (2) 3. Pilosity on the abdomen ochreous or straw-yellow
var. *flavopilosus*, Emery.
- (1) 4. Head and thorax more or less dark reddish.
- (8) 5. Smaller species, 2½, 12–13 mm. long.
- (7) 6. Pilosity on the abdomen short, sparse, evenly distributed all over, not hiding the colour and sculpture of the integument
race *brevisetosus*, Forel.
- (6) 7. Pilosity on the abdomen long and abundant, but the base of the 1st, and some large median spots on the 1st, 2nd and 3rd segments glabrous
race *detritus*, Emery.
- (5) 8. Larger species, 2½, 15–17 mm. long.
- (10) 9. Pilosity of abdomen reddish ochreous (but not so dark as in the type of the species); 2nd and 3rd segments with a glabrous median spot; shoulders of pronotum angular var. *detritoides*, Forel.*
- (9) 10. Pilosity of abdomen straw-yellow, no glabrous spots; shoulders of pronotum dentate race *storeatus*, Forel.

C. FULVOPILOSUS, De Geer.

Mem. Hist. Insect. 7, p. 613, 1778.

2½, 15–16 mm. Black, dull, densely reticulate-punctate or granulate, more closely and finely so on the abdomen than elsewhere, the legs superficially reticulate, feebly shining and with shallow pubescent punctures. On the cheeks and frons there is a fine and sparse puncturation superimposed. Pubescence exceedingly short and fine, occurring only on the legs and antennae. Mesonotum, epinotum and petiole with a few thick, erect and pale yellowish hairs. Abdomen with a very dense and almost decumbent pilosity, composed of thick blunt hairs of a fulvous or foxy-red colour (paler at their bases), the 2nd and 3rd segments sometimes with an indistinct median patch devoid of hairs.

Head very large (4–4.3 mm. wide by 5–5.2 mm. long), including the closed mandibles more or less triangular, excluding them about as long as wide, twice as wide at its widest (just behind the eyes) as across the anterior margin, the sides convex, the posterior margin feebly concave, the posterior angles widely rounded. Mandibles dull, finely, shallowly and fairly closely punctured, armed with 6 or 7 teeth. Median area of clypeus subquadrate, very little wider in front than behind, feebly subcarinate, the anterior margin straight, hardly produced into a lobe. Frontal carinae not greatly divergent, longer

* *Detritoides* is sometimes black on the head and thorax, but it may be distinguished in that case from the type of *fulvipilosus* by the larger head of the 2½, and the paler or reddish ochreous colour of the abdominal pilosity.

than their greatest distance apart. The scapes strongly incrassate apically, extending beyond the hind margin by about one-fourth of their length. Eyes rather small, feebly convex, placed at the posterior third. Thorax not much narrowed posteriorly. Pronotum very little wider across the shoulders than behind, twice as wide as long, the sides clearly delimited from the rather flat dorsum, the anterior angles or shoulders submarginate and rectangular. Mesonotum convex, oval, as long as wide in front. Both thoracic sutures distinct, not deep. Dorsum of epinotum convex transversely, a little narrowed towards the apex, a little longer than the very oblique declivity, which it joins in a very wide angle (175°). Scale of petiole thick in its lower half, much thinner above, the anterior face very convex transversely, the posterior face flat and seen from behind ovate, the dorsal edge fairly trenchant. Tibiae strongly compressed or prismatic, the faces canaliculate, armed below with a few short setae.

♂ media, 12.5 mm. Head longer and more trapezoidal than in the 2♂, a little longer than wide, one and a half times wider at its widest than across the anterior margin, the sides convergent anteriorly but fairly straight, posterior margin almost straight. Eyes placed a little further back, more convex and relatively larger than in the 2♂. The scapes extend beyond the hind margin by nearly one-third of their length. The pronotum is nearly flat above, longer than in the 2♂ or nearly as long as wide, the anterior angles somewhat less acute. The dorsum of the epinotum more oblique, forming with the declivity an almost continuous and low curve. Scale a little lower and thicker. Abdomen usually without glabrous patches. Otherwise like the 2♂.

♂ minor, 10–11 mm. Head and antennae often of a slightly reddish black colour. Head similar to that of the ♂ media but longer and narrower, longer than wide, hardly one-fourth wider at its widest than across the anterior margin. The sides in front of the eyes straight and convergent anteriorly, fairly convex behind the eyes, the posterior margin straight. Eyes very convex and relatively much larger than in the 2♂. The scapes extend beyond the hind margin by a little more than two-fifths of their length. Pronotum as long as wide, the anterior angles as in the ♂ media. Abdomen narrower than in the 2♂. Otherwise like the 2♂ and ♂ media.

♀, 16.5–19 mm. Head like that of the ♂ minor, but a little less narrowed in front. Pronotum with rectangular shoulders, plainly visible from above. Dorsum of epinotum shorter than the subvertical declivity, merging into it by a rapid curve. Scale of petiole thicker than in the 2♂, the anterior face more convex from above to

below. Wings fuscous, nervures and stigma blackish brown. Otherwise like the 2♂.

♂, 10–11.5 mm. Black. Head, mesonotum and scutellum closely and finely reticulate-punctate and dull; epinotum, scale and abdomen moderately shining and very superficially reticulate-rugulose. The pilosity consists of pale yellowish, long, thin and pointed hairs, quite different from the pilosity of the 2♂ and ♀. It is not very abundant, but is more plentiful on the abdomen than elsewhere. Head as long as wide across the eyes, the sides in front of the latter straight, moderately convex behind them. Clypeus carinate. Mandibles large, edentate. The scapes extend beyond the hind margin by at least half their length. Frontal carinae strongly divergent behind. Declivity of epinotum subvertical, slightly convex from above to below, twice as long as the dorsum, their junction widely arcuate. Scale of petiole thick, low, about one and a half times wider than thick, both faces convex transversely, the upper edge obtuse and emarginate in the middle. Wings hyaline or very faintly tinged with yellow, nervures and stigma pale brown.

S.W. Africa, the Karroo and Grahamstown.

(S.A.M., R.M., G.A. colls.).

Var. *FLAVOPILOSUS*, Emery.

Ann. Soc. Ent. France, vol. 63, p. 54, 1895.

Like the type of the species, but with the pilosity on the abdomen of a pale straw-yellow; the glabrous median patches are rarely present, and when they occur are always smaller than in the type. It attains to a larger size, 2♂, 15–17 mm. The scale is a little thicker in both the 2♂ and ♀ than in the type of the species.

♂, 9.8 mm. Smaller than the type of the species. The dorsum of the epinotum is more oblique and the scale is less deeply emarginate above, and thicker or about as long as wide. Otherwise like the type.

S. Rhodesia. Almost confined to sandy and well-wooded regions, frequently nesting under stones and fallen trees. A most vicious and courageous insect, which, when the nest is disturbed, has a most uncommon and disconcerting way of rushing out in files direct towards the intruder, even if the latter is standing several feet away from the nest. The bite of the 2♂ 2♂ is quite capable of drawing blood. In walking, the abdomen is carried reflected over the thorax, giving the insect a peculiar and distinctive appearance.

Var. DETRITOIDES, Forel.

Schultze, Reise Südafrika, vol. 4, p. 25, 1910.

Like the type of the species, but with large glabrous patches on the 2nd and 3rd abdominal segments. The head is even larger than in the type, in the ♂ measuring 5.2 mm. wide by 5.9 mm. long (including the mandibles). Forel says that apart from the above characters it is exactly like the type species. I have a specimen which is undoubtedly to be referred to this variety which has the head and thorax very dark blood-red, and the abdominal pilosity paler than in the type, more reddish ochreous than fulvous.

Glatkop, Little Namaland, (Schultze); Clanwilliam, Cape Prov. (Malley).

(S.A.M., G.A. colls.).

Race DETRITUS, Emery.

Bull. Soc. Ent. Ital., vol. 18, p. 357, ♂, ♀, 1886.

Forel, *loc. cit.*, p. 26, 1910.

“♀. Very much like *fulvopilosus* but smaller, dark ferruginous, the abdomen black, head nitidulous, more finely reticulate, the sparse puncturation deeper, the scale thinner and more procumbent, pilosity of abdomen pale flavous, the base glabrous, the glabrous patches on the 1st, 2nd and 3rd segments much larger than in *fulvopilosus*. Length, 9.5–13 mm. Damaraland.”

The ♀ minor has the front of the pronotum from shoulder to shoulder sharply marginate.

♀ minor. Walfish Bay. (S.A.M., G.A. colls.).

Race STOREATUS, Forel. (Plate IX, fig. 140).

Loc. cit., p. 26, ♀ minor.

♂, (hitherto undescribed), 15–16 mm. Head, thorax and flagellum dark blood-red or brownish red, the anterior half of the head, the scapes, legs and mandibles very dark reddish brown. Abdomen black. The pilosity of the abdomen is slightly darker than in *flavopilosus*, ochreous and not at all reddish as in the type *fulvopilosus*. It is much more dense than in either of those forms and the glabrous patches are entirely absent. The head is very large, as in the var.

detritoides. The sparse superimposed puncturation more plentiful and deeper. The reticulate-punctate fundamental sculpture is stronger and extends over the scale as well. The anterior angles of the pronotum are produced into slightly flattened teeth, somewhat obtuse at their extreme apices, and about three-quarters as long as their basal width. The scale of the petiole is distinctly emarginate above. Otherwise like *fulvopilosus* and the var. *detritoides*.

♂ media, 12 mm.; ♀ minor, 11 mm. Like the ♂, but the colour of the head, thorax, legs and antennae brighter. As in the ♂, the sculpture is distinctly stronger than in the type of the species. The pronotal teeth in the ♀ media are less prominent, more obtuse, twice as wide at the base as long. The scale is much thicker than in the type, the anterior face strongly convex, the posterior face slightly so transversely, but almost flat vertically, subacuminate in the middle of the dorsal edge. In the ♀ minor the pronotal shoulders are merely angular and the scale is not subacuminate above.

♀, (hitherto undescribed), 16.5 mm. Colour, pilosity and sculpture as in the ♂. Pronotal shoulders merely angular as in the type of the species, which it otherwise resembles.

Willowmore, Cape Prov. (Brauns); Toverwater, Oliphants River, (Arnold).

(S.A.M., R.M., G.A. colls.; types of ♂ and ♀ in my collection).

Race BREVISETOSUS, Forel.

Loc. cit., p. 25, ♂, ♀.

♂, 10–13 mm. Colour as in *storeatus*, sculpture as in *fulvopilosus* type. The pilosity of the abdomen is pale ochreous, short and quite blunt, evenly distributed but sparse, and showing the colour and sculpture in between the hairs; the latter are distant from each other by as much as their own length. In addition, the abdomen has a fine, sparse and decumbent, yellowish pubescence. The shoulders of the pronotum are much more prominent than in the type of the species, but not so much so as in *storeatus*, merely subdentate. The dorsum of the epinotum is narrow and more cristate, also longer than in the type of the species, its junction with the declivity distinctly angular. The scale is higher and much thinner, the dorsal edge emarginate in the middle and sharply trenchant.

♀ minor, 7.5–9 mm. The head of a brighter red than in the ♂ and without the superimposed puncturation. The epinotum is more compressed, the dorsum being almost linear; it joins the declivity a

little less angularly than in the 2♂. Scale more shallowly emarginate. Otherwise like the 2♂.

“♀, 14 mm. Head red, all the rest black. Abdomen with the same sort of pilosity and pubescence as the ♀. Scale fairly thin.”

Natal, 3,000 ft. (Haviland); Capetown, ♀. (Wilms).

(G.A. coll., ex Haviland coll. in the Natal Museum).

GENUS POLYRACHIS, Shuckard ? (Smith).

Shuckard, Hist. Insects, 1840.

Smith, Journ. Proc. Linn. Soc., 11, p. 58, 1858.

Characters.

♀. Antennae 12-jointed, flagellum filiform, scapes long. Maxillary palpi 6-, labial palpi 4-jointed. Monomorphic. Frontal carinae always raised. Pronotum, and often epinotum armed with spines or teeth. (Mesonotum unarmed in all our species.) Lateral margins of the dorsum of the thorax sharply marginate in nearly all S. African species, the sides of the thorax vertical. Scale of the petiole nearly always armed with spines or teeth. Abdomen more or less globose, the 1st segment much larger than the rest, forming half or more of the abdomen.

♀. Antennae as in the ♀. Armature of the thorax much weaker than in the ♀, or obsolete. Wings with a closed radial and one cubital cell, the cubital vein usually reaching the outer margin, no discoidal cell.

♂. Antennae 13-jointed. Thorax and petiole unarmed, the epinotal stigmatic orifices sometimes very prominent laterally. Very much like the ♂♂ of *Camponotus*, in many cases indistinguishable from them. Distribution. Both hemispheres.

The species of *Polyrachis* nest either in trees or in the ground. The nest is frequently made of a silky woven material, intermixed in some cases with carton. With some species, the entrance to the nest is surmounted by a raised wall of woven grass or similar material, intermixed with what appears to be silk.

Key to the species of Polyrachis, ♀.

- (14) 1. Large species, not less than 8 mm. long; the pronotum with acute spines which are as long as, or nearly as long as, the portion of the pronotum behind them, or at least twice as long as their basal width.

- (9) 2. Whole body fairly dull.
- (4) 3. More than 12 mm. long; pubescence on the thorax very dense, pale golden or grey, hiding the sculpture *militaris*, Fab.
- (3) 4. Less than 12 mm. long; pubescence on the thorax less dense.
- (8) 5. Pubescence greyish.
- (7) 6. Pubescence long, hiding the sculpture of the head and thorax
schistacea, Gerst.
- (6) 7. Pubescence shorter, not hiding the sculpture
schistacea, race *rugulosa*, Mayr.
- (5) 8. Pubescence distinctly silvery *schistacea*, race *Schlüter*i, Forel.
- (2) 9. At least the abdomen very shining.
- (13) 10. Head and thorax subopaque.
- (12) 11. Eyes flat *schistacea*, race *gagates*, Smith.
- (11) 12. Eyes moderately convex *schistacea*, race *indefinita*, Forel.
- (10) 13. Head moderately shining, thorax and abdomen very shining
indefinita, var. *acheron*, Arnold.
- (1) 14. Smaller species, less than 8 mm. long; pronotum with teeth which are rarely more than one and a half times longer than their basal width, and always much shorter than the portion of the pronotum which lies behind them.
- (22) 15. Abdomen dull, without pilosity.
- (17) 16. The inner pair of spines on the petiole much shorter than the outer pair
viscosa, Smith.
- (16) 17. The inner pair of spines on the petiole longer than the outer pair.
- (19) 18. Abdomen and thorax very distinctly longitudinal striate; the inner pair of spines on the petiole thinner than, but only a little longer than, the outer pair *Arnoldi*, Forel.
- (18) 19. Abdomen reticulate.
- (21) 20. Thorax strongly and longitudinally rugoso-striate, not much wider in front than behind; meso-epinotal suture distinct; pronotal teeth a little longer than their basal width *spinicola*, Forel.
- (20) 21. Thorax finely reticulate-punctate, much wider in front than behind; meso-epinotal suture nearly obsolete; pronotal teeth shorter than their basal width *cubaensis*, Mayr, race *durbanensis*, Forel.
- (15) 22. Abdomen shining, with a fairly abundant and long pilosity
Revoili, André.

Cubaensis Mayr i. sp., and its race *gallicola* Forel, are not included in the key above, being unknown to me in nature. *P. Gamai* Santschi is also excluded, only the ♀ being known.

P. SCHISTACEA, Gerstaecker.

Monatsb. Akad. Wiss. Berlin, p. 262, ♂, 1858.

♂, 7.5–9 mm. Black, dull. Clothed all over with a dense, decumbent and fine cinereous pubescence, which, on the head and thorax,

where it is most abundant, more or less masks the sculpture. Pilosity greyish yellow, more or less erect, fairly scanty on the thorax, more abundant on the head and abdomen. On the legs and scapes the pilose hairs are coarser, and the pubescence finer.

Head, thorax and petiole more or less longitudinally rugose, here and there reticulate-rugulose, the spaces between the rugae coriaceous. Abdomen closely and finely reticulate-punctate. Legs and scapes very finely reticulate-punctate or merely reticulate. Head, including the closed mandibles, oval, two-fifths longer than wide, hardly wider behind than in front, very convex above. Clypeus convex transversely, slightly depressed behind the anterior margin which is convex and entire. Frontal carinae raised, feebly sinuate, fairly closed together. Eyes very convex, (the degree of convexity is variable), placed at the posterior third of the sides. The scapes incrassate apically, extending beyond the hind margin by half their length and reaching the pro-mesonotal suture. Mandibles elongate triangular, strongly sulcate and punctate in between the sulci, 5-dentate. Pronotum narrowed anteriorly from about the anterior third and armed at that point on each side with a long and acute spine lamelliform in its basal half, divergent and directed forwards and slightly outwards, two and a half times longer than its basal width and as long, or nearly as long, as the portion of the pronotum behind it; the posterior two-thirds of the pronotum parallel-sided. The sides of the dorsum of the thorax, from the pronotal spines as far as the epinotal teeth, are sharply marginate, the margins projecting a little beyond the vertical sides, and over the base of the mesonotum reflected a little upwards. Both thoracic sutures sharply defined. Mesonotum a little wider in front than behind, twice as wide as long, the anterior margin feebly arcuate, the posterior margin straight. Dorsum of epinotum convex lengthwise and sloping downwards behind, one-fifth longer than wide, parallel-sided, ending on each side behind in a rounded and upturned triangular tooth. Declivity of epinotum concave from above to below, oblique, half as long as the dorsum. The dorsal profile of the thorax forms a fairly high and continuous convexity. Scale of petiole seen from the side more or less conical, seen from above, with an anterior and a posterior face, the anterior face trapezoidal, widest above and fairly flat transversely, the posterior face convex, the dorsal edge thick and rounded from front to back, ending on each side in a long and acute spine which is as long as or longer than the anterior face of the scale, curved, divergent and directed upwards. Just below and outside these inner spines there

is on each side a short triangular tooth, as long as wide. The distance between the apices of the inner spines is about twice the length of the spine. Abdomen globose. Legs long and stout.

Durban.

(S.A.M., R.M., G.A. colls.).

Var. *DIVINOIDES*, Forel.

Rev. Zool. Afric., vol. 2, p. 348, 1913.

A very slight variation in which the pronotum is as long as wide or nearly so, and as wide in front as behind (excluding the sloping neck-like portion in front of the spines). In the type species the pronotum is one-quarter wider than long. The arc of the occiput is more convex and the lateral spines of the scale shorter.

Transvaal.

Race *RUGULOSA*, Mayr. (Plate VIII, figs. 125, 125a).

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 685, ♂, 1862.

♂, 10–11 mm. Very similar to the type of the species, but larger and more robust, the pubescence less abundant, hardly hiding the sculpture. The spaces between the rugae on the head and thorax are slightly shining. The head is wider, more convex at the sides, between one-sixth and one-seventh longer than wide; the clypeus feebly carinate. The lateral margins of the thorax are more deeply emarginate at the pro-mesonotal suture, owing to the sides of the pronotum converging more towards that point, and to the corners of the mesonotum projecting further outwards. The pronotal spines are wider at their base, and are very little more than twice as long as wide at the base. The dorsal profile of the thorax forms a higher convexity. The outer pair of spines on the petiole are a little larger and less triangular. Otherwise like the type of the species.

♀, (hitherto undescribed?), 12 mm. Head a trifle longer than in the ♂, and a little less convex-sided. Pronotal spines much shorter than in the ♂, plainly visible from above, a little longer than their basal width. Mesonotum wider than long, very convex in front. Scutellum very convex from front to back, transversely oval, half as long as the mesonotum and four-fifths wider than long. Dorsum of epinotum moderately oblique, feebly convex transversely, widest at

the base and two and a half times wider there than long, the posterior corners feebly dentate. The declivity is nearly as long as the dorsum. Scale of petiole narrower than in the ♂, the inner spines much less divergent and shorter, shorter than the interval between their bases (as long as the interval in the ♂). Wings deeply tinged with brown, nervures and stigma dark brown.

S. Rhodesia; fairly common. The nest is made in the ground, under stones. The entrance is surrounded by an irregular, cup-like wall about 1 to 1½ inches high, made of woven pieces of grass-blades and similar material. Like all the members of this genus, this ant is a timid insect. It climbs trees and shrubs, and tends Aphids, Coccids, etc.

(S.A.M., R.M., G.A. colls.; type (?) of ♀ in my collection).

Race GAGATES, Smith. (Plate IX, fig. 127).

Cat. Hymen. B.M. VI, p. 71, ♂, 1858.

Forel, Ann. Soc. Ent. Belg., vol. 30, p. 194, ♀, 1886.

“ ” ” ” ” ” 57, p. 357, 1913.

♂, 10–11 mm. Head and thorax subopaque, petiole and abdomen very shining. The sculpture on the head and thorax more evenly and a little more strongly striato-rugose than in the type of the species, not hidden by the pubescence which is exceedingly sparse and inconspicuous. Abdomen microscopically reticulate, without pubescence, pilose only on the apical margins. Eyes nearly flat, otherwise the head is like that of *rugulosa*. The sides of the pronotum behind the spines parallel over the greater part of their length, not gradually convergent behind as in *rugulosa*. The dorsum of the thorax is a good deal more convex, especially on the posterior half than in *rugulosa*, the dorsum of the epinotum sloping more steeply downwards; the epinotal teeth somewhat wider and curved more upwards. The inner spines of the scale less divergent than in the type of the species, which it otherwise resembles.

“♀, 10 mm. Thorax very gibbous in front. Pronotal spines half as long as in the ♂. The inner spines of the scale half as long as in the ♂, only twice as long as the outer spines, the latter as strong as in the ♂. The mesonotum is very shining, very feebly reticulate, like the abdomen. The scutellum and epinotum have a much coarser sculpture and are dull, as in the ♂. The scapes, and particularly the tibiae, with some erect pilose hairs. Deälated. Otherwise like the ♂.

Possibly the sparse pilosity on the scapes and tibiae constitutes a variety, and is not merely a ♀ character."

Durban, (C. B. Cooper); Shiluvane, Transvaal, (Berthoud).

Race INDEFINITA, Forel.

(as var. of *gagates*) Rev. Zool. Afric., vol. 2, p. 349, 1913.

"♂, 11 mm. This race differs from *P. nigriseta* Santschi by having the eyes about intermediate in structure between that species and *P. gagates*. They are not so strongly convex as in *nigriseta*, nor entirely flat as in *gagates*, but very feebly convex. Otherwise exactly like *gagates*."

Selukwe, S. Rhodesia, (A. E. V. Zealley).

(S.A.M., R.M., G.A. colls.).

INDEFINITA, var. ACHERON, n. v.

♂, 10-10.5 mm. Eyes distinctly convex, (about one-third of a sphere), the convexity twice as strong as in *indefinita*. Sculpture much more superficial than in either *gagates* or *indefinita*, the thorax, especially the pro-mesonotum, being almost as shining as the abdomen. The pronotal spines are more distinctly incurved at their apex than in *indefinita*. The lateral margins of the dorsum of the epinotum moderately convex outwardly. Abdomen distinctly more shining than in *gagates* or *indefinita*. Otherwise like the latter.

Hillside, Bulawayo. The nest under a large rock, the entrance surmounted by a wall of woven material, which also lined the first three or four inches of the gallery.

(S.A.M., R.M., G.A. colls.; type in my collection).

P. MILITARIS, Fab. (Plate IX, fig. 128).

Spec. Insect., 1, p. 493, ♀, 1781.

Mayr, Verh. Zool. Bot. Ges. Wien, vol. 16, p. 886, ♂, 1866.

Forel, Bull. Soc. Vaud. Sc. Nat., vol. 16, p. 119, 1879.

This species has not, to my knowledge, been recorded within our limits, but as it or some of its varieties occur in the adjacent regions, it is possible that they may be recorded later on from parts of Natal or the eastern part of S. Rhodesia, and a description is therefore desirable.

♂, 13 mm. A larger and more robust insect than *schistacea* or any of its varieties. Black. Head rather finely and more or less longitudinally reticulate-rugose, the sculpture a good deal stronger than in *schistacea*. Thorax longitudinally rugulose, petiole irregularly rugose and partly reticulate-rugose. Abdomen finely and densely reticulate-rugulose and feebly shining. Head and thorax dull. Pubescence yellowish grey, fairly long, more or less hiding the sculpture on the thorax, much shorter on the abdomen, scapes and legs, least abundant on the head. Pilosity yellowish, a little more plentiful than in *schistacea*, especially on the legs. Head one-sixth longer than wide, the sides feebly convex (less convex than in *schistacea*), as wide in front as behind. Clypeus not transversely impressed behind its anterior margin. Mandibles very finely striate and feebly punctured. Eyes convex, placed at the posterior third. The head is as wide as or wider than the distance between the base of the pronotal spines (narrower in *schistacea* and its races). The scapes extend beyond the hind margin by half their length. Pronotal spines about twice as long as their width across the base. The lateral margins of the dorsum of the thorax more deeply excised at the sutures than in *schistacea*, the anterior angles of the meso- and epinotum raised higher, so that the base of the dorsum of the epinotum is rendered slightly concave transversely. Pro-mesonotal suture strongly arcuate. Mesonotum one and three-fourths wider in front than long. Dorsum of epinotum about as long as wide, quadrate, its apical teeth fairly acute, directed upwards, and stronger than in *schistacea*. Anterior face of the scale almost dorsal in position, the petiole being inclined further backwards than in *schistacea*; the inner spines shorter than the anterior face is long, the outer spines about one-third as long as the inner, much longer than in *schistacea*, and separated from the inner pair by a greater distance, the distance being about equal to half the length of the inner spine.

(G.A. coll.).

SCHISTACEA race, SCHLÜTERI, Forel. (Plate IX, fig. 129).

Ann. Soc. Ent. Belg., vol. 30, p. 195, ♂, 1886.

(var. *indigena*, syn. with type), Bull. Soc. Vaud. Sc. Nat.,
vol. 50, p. 261, 1914.

♀, 8.5–9 mm. Black; head and thorax finely reticulate-rugulose, more or less longitudinal on the head, the sculpture much finer than

in *schistacea*. Abdomen delicately reticulate and dull. The sculpture, and to some extent the colour, is masked by the dense and decumbent pubescence, which has a silky and bright silvery appearance. Pilosity entirely wanting, even on the legs. Head quadrate rather than oval, more rectangular than in *schistacea*, about one-sixth longer than wide, the sides feebly convex or nearly straight, about as wide in front as behind, and with a feebly convex or nearly straight posterior margin which is plainly visible from above, (not so in *schistacea*, in which the margin is placed very low down). Clypeus not carinate, not depressed behind the anterior margin. The pronotal spines are much wider at the base than in *schistacea*, and their outer margins are continuous with the margins of the pronotum, not forming an angle with the latter as in *schistacea*. The dorsum of the thorax is more arched, especially behind, the posterior half of the dorsum of the epinotum being almost vertical. The dorsum of the epinotum is a little wider than long and slightly wider behind than in front; the posterior angles terminate in small obtuse tubercles, not teeth. The spines of the scale are a little shorter and less divergent, and the outer teeth a little longer than in *schistacea*. Otherwise like that species.

♀, (hitherto undescribed), 10 mm. Pronotal spines almost as long as in the ♂, twice as long as their basal width. Mesonotum one-fourth wider than long, scutellum half as long as the mesonotum, very little wider (excluding the paraptera) in front than behind. Dorsum of epinotum quadrate, two and a half times wider than long, barely wider in front than behind, its basal half horizontal, the apical half curving slightly downwards. The declivity vertical, a little shorter than the dorsum, moderately concave from above to below. The lateral teeth of the scale much stouter than in the ♂, the inner spines one-third shorter and less divergent than in the ♂. Wings brown, nervures and stigma blackish brown. Otherwise like the ♂. In hot and moist localities only.

Palm Grove, Victoria Falls; Stella Bush, Durban.

The specimens from Durban were separated by Forel as a distinct variety, differing from the type only by the slightly less robust stature and the less brilliant pubescence. The supposed difference in the nature of the pubescence is, however, unreal, being due to the specimens having been immersed in spirits of wine, which, to a very great extent, destroys the brilliancy. In life, the insect is brilliantly silvery.

(S.A.M., R.M., G.A. colls.; type of ♀ in my collection).

P. viscosa, Smith. (Plate IX, fig. 132).

Cat. Hymen. B.M. VI, p. 71, ♂, 1858.

♂, 6-7 mm. Black, dull. Head, thorax and petiole finely reticulate-rugose or rugulose, the rugae emphasised longitudinally, the spaces between them reticulate-punctate. Legs shallowly, the abdomen closely and deeply reticulate-punctate. Pubescence very short and inconspicuous, present only on the legs and antennae; a few pilose hairs on the anterior margin of the clypeus and the apex of the abdomen, otherwise glabrous. Head oval, one-fifth longer than wide, slightly narrowed in front. Clypeus moderately convex, not carinate, finely and longitudinally striate and also very shallowly punctured with elongate punctures, its anterior margin arcuate, slightly raised, narrowly and angularly excised in the middle. Mandibles strongly striate longitudinally, 5-dentate. Eyes large and flat, placed at the posterior third of the sides. The scapes extend beyond the hind margin by about one-third of their length, and are rather abruptly widened at their apex. Dorsum of thorax fairly convex from side to side and lengthwise, sharply marginate at the sides. The pronotal spines are about one and a half times longer than their basal width, and the sides of the pronotum behind are two and a half times longer than the spines. The pronotum, excluding the part in front of the spines, is one-fourth wider than long, hardly narrower at the suture than just behind the spines. Pro-mesonotal suture deep, nearly straight. Meso-epinotal suture almost obsolete. Mesonotum twice as wide as long in the middle. Dorsum of epinotum quadrangular, nearly twice as wide as long, the posterior corners bearing slightly curved and upwardly directed triangular teeth, which are as long as their basal width. Scale of petiole much wider above than below, one-third wider than long (i.e. thick), both faces very convex; the inner spines are hardly longer than their basal width and about half as long as the interval between their bases; the outer spines are directed upwards, outwards, and backwards and vary a little in length, but are at least twice as long as the inner pair, and are as far apart at their base from the inner ones as the latter are from each other. Base of abdomen concave, fitting the posterior convex face of the scale.

On sandy soil, climbing over grass and low shrubs.

Cawston Block, Ungusa River and Redbank, S. Rhodesia; Lonely Mine, S. Rhodesia, (Swale).

Quite distinct from all our other species by having the inner spines of the petiole shorter than the outer.

(S.A.M., R.M., G.A. colls.).

P. ARNOLDI, Forel. (Plate IX, fig. 126).

Bul. Soc. Vaud. Sc. Nat., vol. 50, p. 263, ♀, 1914.

♀, 7.5 mm. Black; a few pilose hairs on the anterior margin of the clypeus and at the apex of the abdomen, legs and scapes very sparsely pubescent, otherwise entirely glabrous. Dorsal surface of the body evenly, sharply and longitudinally striate or sulcate, the spaces between the striae moderately shining. Petiole and sides of thorax fairly coarsely and irregularly reticulate-rugose, the rugae more or less longitudinal on the upper half of the scale. Legs, clypeus and declivity of epinotum shining, feebly reticulate, the clypeus also sparsely and very shallowly punctured. Head subovate, widest across the eyes, hardly longer than wide, narrower in front than behind, the sides in front of the eyes fairly straight and convergent anteriorly, convex behind the eyes, the posterior margin very convex. Clypeus almost flat, the anterior margin arcuate and feebly emarginate in the middle. Mandibles subopaque, finely reticulate, sparsely punctured, 5-dentate. The scapes extend beyond the hind margin by about one-third of their length. Eyes large, moderately convex, placed a little behind the middle. Pronotum feebly narrowed behind, its lateral margins feebly convex, two-thirds wider than long in the middle (excluding the portion in front of the spines), the spines broad, flattened, acute, a little longer than their basal width, their outer margins not forming an angle at their junction with the lateral margins of the pronotum. Mesonotum half as wide again as long, the pro-mesonotal suture distinct, the meso-epinotal also, but shallower. Dorsum of epinotum convex transversely and lengthwise, its lateral margins nearly straight, slightly narrowed towards the apical margin which is distinctly marginate, and furnished at each side with a triangular, subvertical tooth which is a little longer than wide, and with a small and triangular and median tooth. Declivity as long as the dorsum, subvertical, moderately concave from above to below. Scale of petiole thick, as thick below as it is wide above between the two inner spines, both faces very convex, furnished above with 4 spines, the inner pair very little longer than the outer and slightly wider apart at their bases than they are from the outer spines.

Durban. The only nest found was made in a shallow concavity on the vertical trunk of a tree, the hollow being covered by a more or less circular lid, about $2\frac{1}{2}$ inches in diameter, made of a very closely woven silky web in which were embedded particles of bark and dirt.

(S.A.M., R.M., G.A. colls.).

P. SPINICOLA, Forel. (Plate IX, fig. 130).

Mitt. Schweiz. Ent. Ges., vol. 9, p. 70, ♂, ♀, 1894.

♂, 5.8–6.5 mm. Black; femora, tibiae, apical joints of the tarsi and apex of flagellum more or less reddish, the other joints of the tarsi brown. Almost glabrous, subopaque. Head reticulate-rugose and here and there pitted, the pits not large. Thorax longitudinally rugoso-reticulate, reticulate-punctate between the rugae. Petiole irregularly rugose. Abdomen very densely and evenly reticulate-punctate. Sides of thorax fairly coarsely reticulate and rugose, the legs and scapes very delicately reticulate.

Head subovate, the sides very convex, the posterior margin not distinctly delimited from the sides, as long as it is wide across the eyes where it is widest, narrower in front of the eyes than behind them. Clypeus feebly carinate, its anterior margin arcuate. Mandibles fairly dull, microscopically aciculate, also sparsely punctured, 5-dentate.

Eyes very convex, hemispherical, projecting beyond the sides of the head, placed at the posterior third. The scapes extend beyond the hind margin by about one-third of their length. Pronotum twice as wide as long (excluding the neck), the lateral margins moderately convex; the pronotal spines are about as long as wide at their base. Both thoracic sutures distinct, the pro-mesonotal feebly arcuate; the mesonotal about one and a half times wider than long, its lateral margins not in the least reflected upwards. Dorsum of the epinotum a little wider than long, distinctly widened towards the apex, which is armed at each corner with a curved tooth, directed outwards, backwards and upwards, the interval between the teeth sharply marginate; the teeth are somewhat obtuse and fairly long, but not so long as the pronotal. Declivity of the epinotum shining, marginate at the sides, very concave from above to below. Scale biconvex, thick, the two inner spines a little thinner and longer than the outer, and curved more backwards. Abdomen concave at its base and inclined forwards.

"♀, 7.7 mm. Like the ♂. The apical margins of the dorsum of the very wide epinotum is undulate, convex in the middle, concave on each side, and ending in obtuse teeth. Pronotum with two strong short spines, produced in front and outwards, lamelliform. Wings faintly tinged with brown, with brown stigma and nervures. Otherwise like the ♂."

Durban, (Marley, Cooper, Arnold), on trees; Delagoa, in hollow thorns of *Acacia*, (Junod); Grahamstown, (Hewitt); Port Elizabeth, (Brauns).

(S.A.M., R.M., G.A. colls.).

P. CUBAENSIS, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 687, ♀, 1862.

Jahrb. Hamburg Wiss. Anst., vol. 10, pp. 3 and 5, 1893.

"♂, 7 mm. Black, slightly shining, ends of the mandibles, the antennae and, to some extent, the legs brown-red. Pilosity wanting; the decumbent pubescence very fine and short, sparse on the head and thorax, more plentiful on the abdomen, tibiae and tarsi. Mandibles very finely rugulose, sparsely and coarsely punctate. Clypeus very finely coriaceous, sparsely punctured, fairly shining. The frons finely and longitudinally rugulose, the vertex punctate and rugulose. Thorax finely punctured, partly rugulose, with 4 teeth, the pronotum having on each side a triangular and acute tooth, directed outwards and somewhat forwards (lamelliform or like a ledge); the epinotum with a short and acute tooth on each side. The petiole with a thick, wide and rounded scale, the arcuate upper margin of which is armed with 4 equidistant teeth, of equal size, short, straight, directed upwards and somewhat backwards. The abdomen fairly superficially shagreened and reticulate."

Durban. Owing to an unfortunate error by which wrong labels were attached to the type of this species and *rugulosa*, Mayr was misled into believing that they were derived from the western hemisphere, hence the totally inappropriate name with which this species is burdened.

Race GALLICOLA, Forel.

Mitt. Schweiz. Ent. Ges., vol. 9, p. 71, ♀, ♀, 1894.

"♂. Like the type of the species, but the two inner spines of the petiole are twice as far apart as they are from the outer spines. The

scale is almost trenchant above, not at all transversely impressed, but like that of *schistacea* and even thinner, and with the outer spines almost as long as the inner. Head as wide as long, very wide behind. Eyes fairly flat, although not so flat as in *gagates*. Head and thorax sharply and longitudinally rugose; sides of the head in front reticulate; finely reticulate-punctate between the rugae. Femora and tibiae partly reddish to brownish yellow.

♀, 7.5–8 mm. The inner spines of the scale curved somewhat backwards, not much longer than the outer spines and not much further apart from each other than they are from the outer spines. Otherwise like the ♂.

Delagoa, (Dr. Liengme), in hollow stem galls. The walls of the gall partly covered with a web."

Race DURBANENSIS, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 50, p. 262, ♂, ♀, 1914.

"In the race *gallicola* the head is wider and there are some distinct longitudinal rugae, and the thorax, especially the epinotum, is more convex than in this race. The ♀ is a little more slender than in *gallicola*, the sculpture finer and the body duller."

♂, 7–7.4 mm. Black, dull, glabrous, except for a very fine and inconspicuous pubescence on the legs and scapes, and a few pilose hairs on the clypeus and apex of abdomen. Head reticulate-punctate, with a few indistinct longitudinal rugae on its anterior half, the clypeus and space between the frontal carinae merely reticulate-punctate, more finely so than on the rest of the head. Thorax and petiole finely and closely reticulate-punctate, the thorax with a few feeble and indistinct longitudinal rugae superimposed. Abdomen densely reticulate-punctate. Head shaped like that of *spiniicola*, the eyes convex and prominent, the clypeus carinate, its anterior margin convex and entire. Pronotum two and a third times wider than long (excluding the neck), armed with a short, wide tooth on each side, shorter than its basal width; the lateral margins of the pronotum convex. Mesonotum subovate transversely, one-third wider than long, the pro-mesonotal suture arcuate anteriorly, the meso-epinotal arcuate posteriorly. Dorsum of epinotum parallel-sided, a trifle longer than wide, armed with a very small tooth on each side of its apical margin; declivity nearly as long as the dorsum, concave. Anterior margin of the thorax nearly twice as wide as the apical

margin of the epinotum. The inner spines of the petiole are barely divergent, directed vertically upwards, about one-third longer than the outer spines and a little nearer to the latter than they are to each other. The outer spines twice as long as their basal width.

♀, 7.9 mm. Pronotum merely angular on each side, not dentate. Dorsum of epinotum also only angular at the posterior corners. The outer spines of the scale are a good deal thicker and more obtuse than the inner ones, and only a little shorter. Wings tinged with brown, nervures ochreous brown, stigma brown. Otherwise like the ♀.

Durban, (C. B. Cooper).

(S.A.M., R.M., G.A. colls.).

P. REVOILI, André. (Plate IX, fig. 131).

(syn. *P. natalensis*, Santschi).

Rev. d'Ent., vol. 6, p. 285, ♀, 1886.

Forel, Mitt. Schweiz. Ent. Ges., vol. 9, p. 71, ♀, 1894.

„ Rev. Suisse Zool., vol. 24, p. 452, ♀, ♂, 1916.

♂, 4.8-5.5 mm. Black. Head and thorax dull, abdomen fairly shining. Head sharply and longitudinally striato-rugose, thorax and petiole more or less longitudinally rugoso-reticulate. Pubescence greyish, long, decumbent, fairly abundant all over, particularly on the thorax. Pilosity greyish yellow, erect, long and abundant all over. Head longer than wide, subovate, wider behind than in front. Clypeus subcarinate, the anterior margin arcuate. Eyes placed at the posterior third, fairly convex and prominent. Pronotum with a tooth on each side which is broad at the base and thin in its apical half, as long as its basal width. Pronotum two and a half times wider than long, and quite twice as wide between the teeth as the apical margin of the epinotum. Both thoracic sutures feeble. Mesonotum two and a quarter times as wide as long. Dorsum of the epinotum trapezoidal, two-thirds wider in front than behind, sloping steeply downwards, armed on each side behind with a very small and vertical tooth. The inner spines of the scale vertical, curved slightly backwards, much longer than their basal width, about two-thirds as long as the interval between their bases; the outer spines very short, merely triangular teeth, placed close to the inner spines.

“♀, 6-7 mm. Wings brown. The epinotum is completely unarmed or sometimes furnished with a small and obtuse tooth. The

mesonotum is merely reticulate, or also with a few longitudinal striae.

♂, 4.5–5 mm. Wings hardly less brown than in the ♀. Mandibles 4-dentate. Head with a wide and convex posterior margin, nearly twice as wide as the anterior. Finely reticulate and subopaque, without coarse sculpture. Scale very thick and low, unarmed. Pilosity sparse all over, very short and oblique on the tibiae and scapes."

Durban.

(S.A.M., R.M., G.A. colls.).

P. GAMAIL, Santschi.

Ann. Soc. Ent. France, vol. 85, p. 295, ♀, 1917.

"♀, 8.5 mm. Black. Mandibles, trochanters and tarsi brownish. Apical margins of abdominal segments narrowly reddish. Shining. Occiput, sides of the head and pronotum, mesopleura, epinotum and scale very finely reticulate-punctate. Erect pilosity fine, woolly, sparse on the head and thorax, more abundant on the abdomen. Pubescence golden and oblique, fairly scanty, quite distinct and exerted on the cheeks.

Head about one-sixth longer than wide, subtruncate in front. Occipital margin widely concave, the posterior angles distinct although rounded. The sides are a little convex, particularly behind the eyes. The latter are placed a little behind the middle of the sides, of which they occupy about a fourth. The distance between the frontal carinae is about equal to their distance from the eyes. Frontal area small, not very distinct, followed by a median sulcus which does not extend beyond the level of the ends of the frontal carinae. Ocelli small and fairly close together. Clypeus convex, not carinate, the anterior margin fairly arcuate. Mandibles punctured, striate, narrow, the inner and outer margins subparallel, the masticatory margin armed with a strong apical tooth and four small teeth behind it. Thorax elongate, a little narrower than the head, higher than wide. Lateral margins of pronotum rounded, the shoulders distinct but rounded. The mesonotum and scutellum form an oval disc, nearly twice as long as wide, separated by a semilunar groove which does not reach the outer margins. Metanotum very narrow, not much depressed. Dorsum of the epinotum as long as the declivity, not marginate, evenly convex transversely, feebly convex lengthwise, armed with two short, thick and upturned teeth. Declivity vertical

in its upper two-thirds which is marginate and transversely concave ; the lower third, on the contrary, is not marginate, and is convex transversely. Scale thick, a little higher than the length of its base. The anterior face vertical, feebly convex transversely. Posterior face convex and oblique in front, merging into the upper face which is concave between its angles. The latter prolonged into a spine which is directed backwards, upwards and outwards and is as long as the interval between its base and that of the other spine. The very angular (trenchant ?) outer margin of the scale has a slight triangular prominence below the spine. Abdomen oval, wider than the thorax, subtruncate in front with the margins rounded. Deälated."

Natal, (H. B. Marley).

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Names in italics are synonyms, or, in the case of generic names, genera to which the species have been wrongly assigned.

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